



FRIDAY, APRIL 21.

Contributions.

Formula for Tractive Force of Locomotives.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of March 24, on page 180, you printed some articles on "The Adhesion and Tractive Power of Locomotives, and the Resistances of Trains," written by "Mr. O. Chanute, for the new edition of 'Haswell's Engineer's and Mechanic's Pocket Book.'"

With respect to the adhesion and the train resistance, I will not at present notice them further than to say that I think some of the conclusions are fully as "empirical" as any given by D. K. Clark; and, judging by the deductions made by Mr. Chanute, from his own analysis and reasonings, are, in some instances, scarcely so "trustworthy."

An article on tractive power should, however, be free from empiricism, as it is a subject which science elucidates independently of any personal opinion; and it is for that

Then the formula for the tractive force of one cylinder will be thus $\frac{AP2L}{C}$

and for two cylinders, $T = \frac{2AP2L}{C}$

Now $A = R^2 \pi = \left(\frac{D}{2} \cdot \frac{D}{2}\right) \pi = \frac{D^2 \pi}{4}$

And $C = W \pi$.

Hence, by a substitution of terms, we find that

$$T = \frac{2 \left(\frac{D^2 \pi}{4}\right) P2L}{W \pi}$$

and by canceling the terms of equivalent value in the latter equation, the formula reduced to its simplest form become

$$T = \frac{D^2 PL}{W} \text{ (and includes both cylinders),}$$

and if we take the same figures given by Mr. Chanute in his illustration, we find that the tractive force of the engine

$$T = \frac{18 \times 18 \times 50 \times 22}{68} = 5,241 \text{ lbs., which is only half the}$$

force as given by him.

JOHN ORTON, Canada Southern Railway.

ST. THOMAS, Ont., April 18, 1882.

itself has an average length of 460 ft. and width of 340 ft., and its entire area is 3½ acres. Underneath the station there are immense stores or cellars, which are formed of arched and groined brickwork, the pillars of which really bear the whole weight of the station above. Owing to their depth below the station a very uniform temperature is maintained in them, and therefore they are well suited for the storage of provisions and beer—chiefly the latter. The principal brewers of both England and Scotland have more or less stock stored here. There is room for 10,000 barrels in the space occupied by Bass alone.

The cellars below are reached by hatchways, one of which is shown at *H* in the perspective view. The beer is received in the cars, from which the barrels are hoisted and lowered into the cellar by the hydraulic cranes, the construction of which will be described further on. It of course can also be hoisted from the cellar to the cars, if required; but generally it is taken away from the cellar in carts, which can drive into it from a street on a lower level than the railroad.

The arrangement of the tracks, the cart roads, and the "loading docks," or the platforms, as they would be called here, is clearly shown in the plan, and as stated before the dotted circles show the cranes. There are 46 of these. Four of them have lifting capacity of two tons each, two one ton each and 41 of 1½ ton each. The offices are arranged if

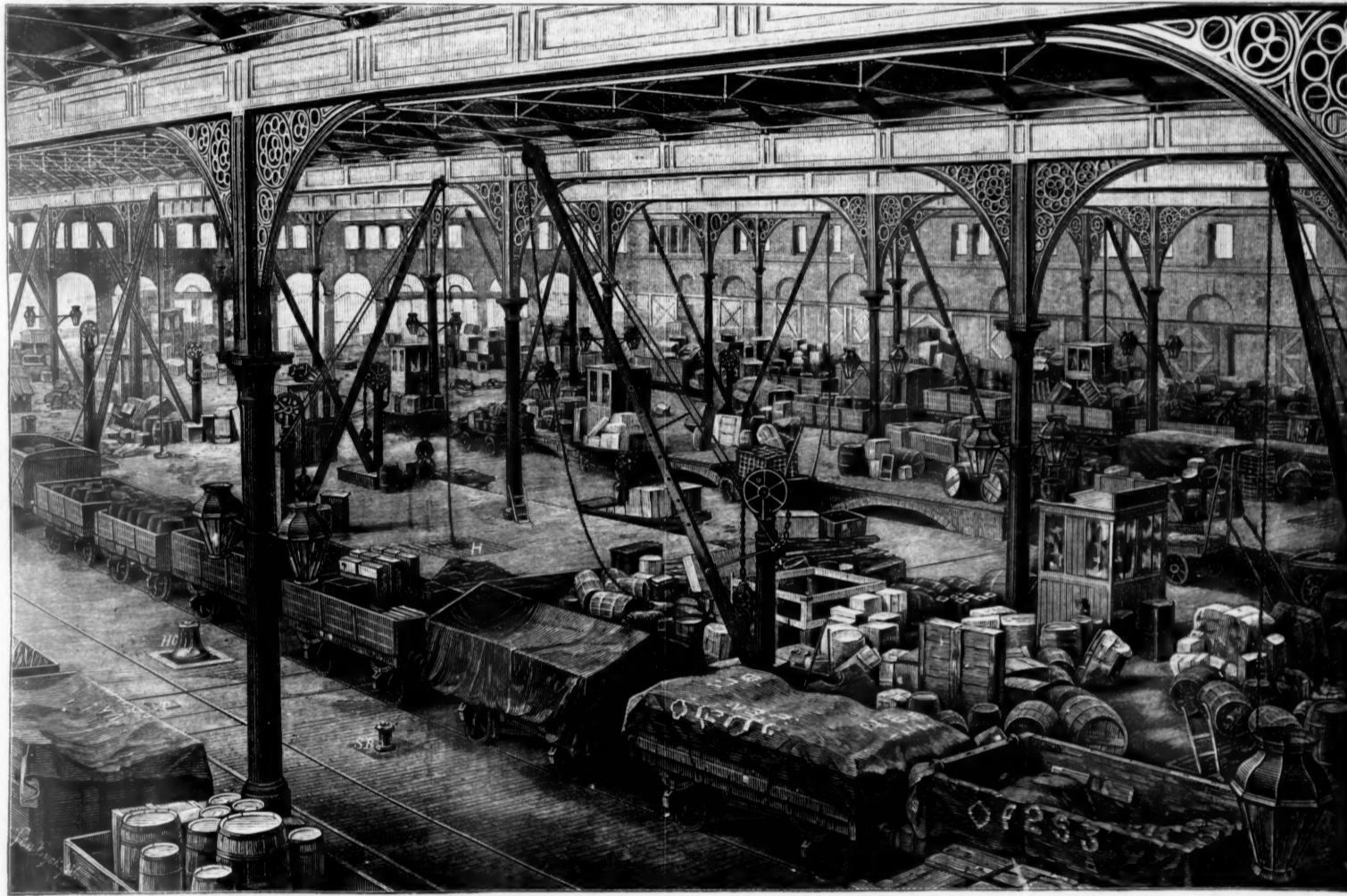


Fig. 1.

VIEW OF INSIDE OF THE FORTH GOODS STATION OF THE NORTHEASTERN RAILWAY, AT NEWCASTLE-ON-TYNE.

reason that I beg to call attention to an important mistake made by Mr. Chanute in his formula for calculating the tractive force of a locomotive. He says: "Its measure is as follows:

$$D^2 PL + W = T, \text{ for each cylinder,}$$

D representing diameter of cylinder; L , length of stroke; W , the diameter of driving wheels, all in inches; P , mean pressure in cylinder in pounds per square inch; T , tractive force on rails in pounds."

Now, the above formula would be correct if the words "for each cylinder" had not been appended.

As an evidence that the author intended the words to be part of the formula, he gives an illustration with a result, which represents the tractive force of his assumed engine exactly double of what it should be, making it 10,482 lbs. instead of 5,241 lbs.

In proof of the correctness of this assertion, I will state the formula usually taken in a primary stage, and show the gradations made to obtain the simple formula, which is equally correct in its application, and almost universally adopted to find the tractive force:

Let A = area of piston, in inches.

D = diameter " "

C = circumference of driving-wheels in inches.

W = diameter " "

L = length of stroke in inches.

P = mean pressure on piston in lbs. per square inch.

T = tractive force on rails in lbs. (for two cylinders).

π = ratio of circumference to diameter = 3.1416:1.

R = radius of piston or $\frac{D}{2}$

An English Goods Station.

An American railroad engineer who visits England will find that in the use of cranes and hydraulic power for lifting heavy weights there is very much for him to learn from English practice. This is especially true of appliances of this kind which are used in many of the freight or "goods" stations in that country. In nearly all of these the handling of heavy objects is effected by means of hydraulic cranes, which are distributed over the station so that a car or "wagon" in almost any position on the track will be within reach of one or more of the cranes. The loading and unloading is thus effected in an incredibly short time, and at very much less expense than it can be done by hand. The illustrations which we give herewith, and a description of the Forth goods station of the Northeastern Railway, at Newcastle, which is said to be one of the most completely equipped places of the kind in England, will therefore be of interest to many of our readers.

The perspective view is made from a photograph, for which we are indebted to Mr. John S. B. Bell, of Newcastle, and the plan, fig. 2, is from a drawing furnished from the office of Mr. T. E. Harrison, Chief Engineer to the company.

The appearance of the inside of the station is very clearly represented by the perspective view, fig. 1, and its arrangement by the plan, fig. 2. In fig. 1 the hydraulic cranes are shown in different parts of the station. Their location is indicated in the plan by the dotted circles. It will be seen from the latter view that there are ten tracks in the inside of the building, and that they are all curved. The building

two stories at the east end of the building. On the level with the floor of the second story there is a gallery from which the photograph, the original of the perspective view, was taken. In a description of this station, written soon after it was built, and published in the Newcastle Chronicle, it was said:

"The doors of the various offices open from this gallery, but it is chiefly valuable to the sight-seer as affording him a stand-point from which he can obtain a bird's-eye view of the lively scene below. The goods station describes a graceful curved sweep, which adds greatly to the effect of its appearance. The roof is in seven divisions, resting upon the outer walls and upon huge iron columns, with flying buttresses, which give it a light and graceful appearance. Large glass skylights render the interior of the station as bright and airy as the outer day. Looking down, the spectator sees curving lines of rails running lengthwise down the station, with goods platforms between, intersected by cross-lines of rail and turn-table for the interchange of trucks from one line or platform to another. There are in all three platforms for lading and unloading goods. As the stranger looks on he sees trains of wagons glide smoothly along the station without apparent cause. No engine pushes, no horse draws. A man or even a lad, simply attaches a rope to the foremost wagon, takes a turn with it round a vertical capstan [one of which *H C* is shown in fig. 1], touching a spring with his foot, and the said capstan spins madly round, winds on the rope and draws the wagons to where they are wanted. There are a pair of these capstans, driven by hydraulic engines underneath the floor, at every intersection of the rails by the cross lines, and by an arrangement of snatch-blocks [one of which *S B* is shown in fig. 1] wherever necessary, a reverse motion of the wagons may be obtained. In fact, trucks may be run either across, or up and down the station. If a wagon is to be taken from the main line of rails across any

* These are simply stationary pulleys on rollers around which the rope is carried to reverse its motion.

of the transverse ones, it is simply run on to a turn-table [T, figs. 1 and 2], one of which is to be found at every crossing; the rope is attached to it, the wheels are 'scotched,' the capstan revolves and turns table and wagon together. There are 28 of these capstans, which are driven by hydraulic engines underneath them, and they do the whole work of the hauling and trimming work of the place, so that not a single horse or locomotive is needed within the station walls."

Probably many American readers will be inclined to ask here "what is an hydraulic capstan?" To this it may be answered that it is what may be called a revolving, bell-shaped spindle with a vertical axis, like a ship's capstan. It is driven by an hydraulic engine underneath, which is reversible and can be started and stopped by treadles placed alongside of it. In moving a car a rope is attached to it and then wound a few times around the capstan. The force exerted on the rope can be accurately graduated by slackening or tightening it. The cars or "wagons" used on English railroads are all four-wheeled vehicles and much lighter than ours with eight wheels; nevertheless most railroad men here who see the work done for the first time would, we think, be surprised at the facility and rapidity with which these wagons are moved by boys not only longitudinally on

tached to the table, and it and the cars are moved on the transverse track to any of the longitudinal lines, and the car is run off and round to whatever point it may be needed. It is all done though with the ropes, capstans and snatch-blocks. In some stations these transfer-tables are moved by horizontal hydraulic plungers, similar to those used for the cranes, the construction of which will be more fully described in another article.

Report of the British Railway Commission.

There is so much misunderstanding in this country of the duties of the British Railway Commission, and some of the cases which it decides have such a general interest as traffic problems, that we copy below in full the first part and an abstract of the rest of the report of the Commission for 1861, during which 17 cases came before it, against 13 in 1860:

1. We, the Railway Commissioners, humbly beg to make a report to your Majesty of our proceedings under the Regulations of Railways Act, 1853, during the past year.

2. We referred in our last report to the proceedings in prohibition then pending in the case of the Corporation of Hastings against the Southeastern Railway Company, which was a complaint that the company's stations at Hastings and St. Leonard's did not afford sufficient facilities to

make the structural alterations or additions that are necessary, is it a contravention of the act if they are not made, and have we jurisdiction on complaint to order them to be made? In the Queen's Bench Division (App. III.) the judges differed in opinion on this general question, but a majority of the Court took the view that the word "facilities" was limited to the details of traffic management, and that we were not empowered to specify the conditions as to accommodation, which the structures of a station must be capable of satisfying. The decision, however, was reversed on appeal, the Court of Appeal (App. III.) pronouncing in favor of the larger and more liberal meaning of the word "facilities," and being of opinion, to quote from the judgment of the Lord Chancellor, "that a company does violate and contravene the Act, if, having sufficient powers, it keeps its platforms, booking offices, and other structures at any station in such a condition as to space and other arrangements as to cause dangerous or obstructive confusion, delay, or other impediment to the proper reception, transmission, or delivery of the ordinary traffic of that station, whether consisting of passengers or of goods."

3. The meaning in another respect of this word "facilities," as used in section 2 of the Traffic Act, 1854, was also the subject of decision by the Queen's Bench Division and Court of Appeal, upon a motion by the Great Western Railway Company for a writ of prohibition to prevent our entertaining an application of one James Brown against them. Brown had complained to us that the Great Western Company had required him to pay fares for traveling between

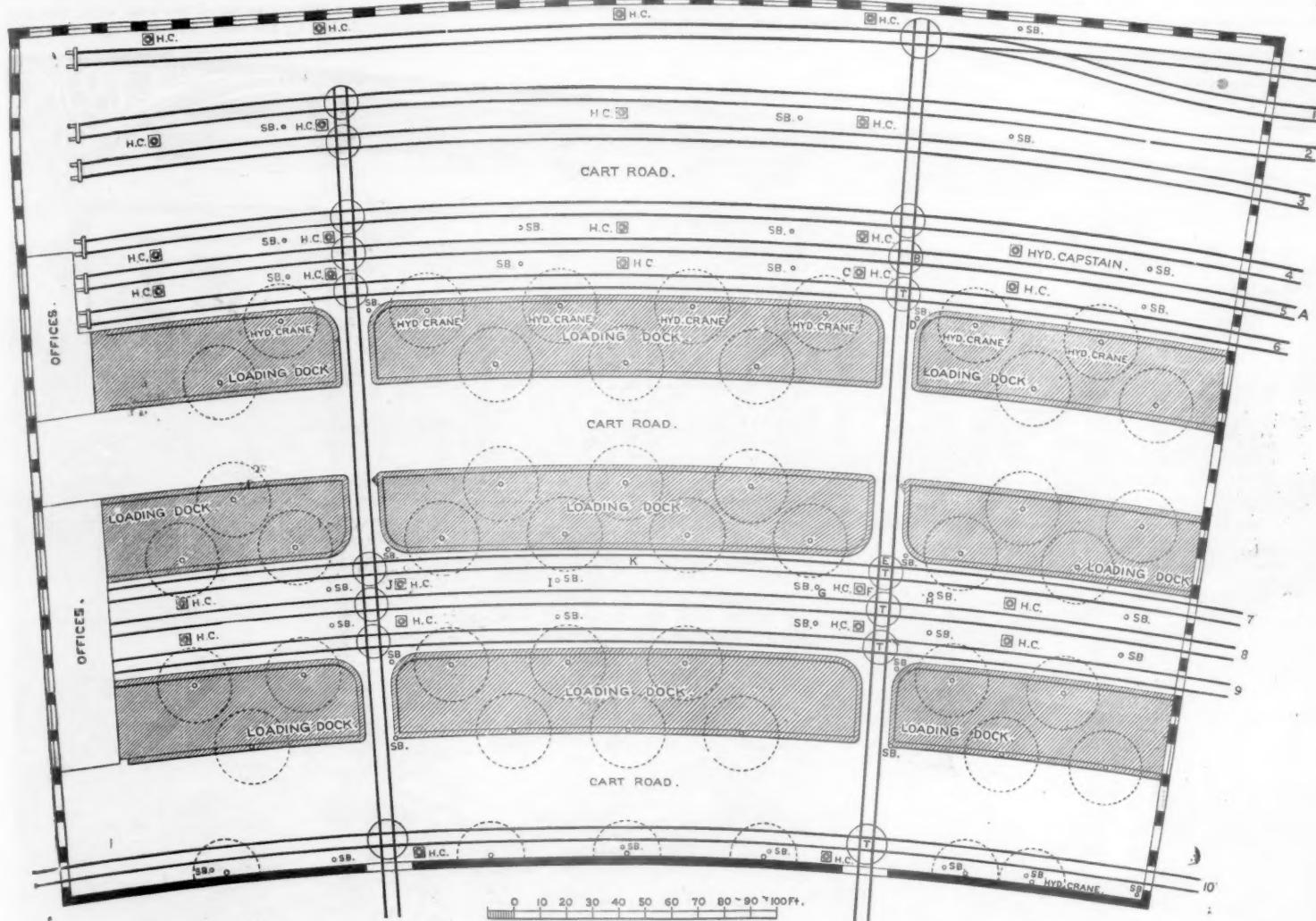


Fig. 2.
PLAN OF FORTH GOODS STATION.

the tracks, but, if it is desired to transfer one of them from one track to another, it is run on a turn-table at the intersection of the rails, is then given a quarter turn, is run on one of the transverse tracks to another turn-table, moved a quarter turn, and run to the required place. Thus supposing a car entered the station on the fifth track at *A*, fig. 2, and was to be moved to *K* on the seventh track, a boy would attach a rope to the car and carry it to the capstan *C*, give it a few turns around the latter, put his foot on the treadle, and in about the time required to write this sentence would run the car on the turn-table *B*. He would then attach the rope to a corner of the car, carry it around the snatch-block *D*, start the capstan again, and in the time required to read about it would have turned the car a quarter way round. He would then carry the rope to the capstan *F*, and in a few seconds would have the car on the turn-table *E*, and by means of the snatch-block *G* would turn it as before. He would then either carry his rope around the snatch-block *I* and wind the former on *F*, or take it to the capstan *J* and draw the car toward him to *K*. In this way the cars or wagons are transferred from one line to another with the most amazing celerity. The work is all done by boys, who soon acquire great dexterity in doing it.

Another arrangement that is used a good deal is a low transfer table with inclined planes at each end, so that cars can be run upon it from any of the tracks. The transfer-table is placed at the intersection of any of the longitudinal and transverse tracks, its wheels being on the latter. The car is first run upon it with a capstan and rope. The latter is then at-

traffic, and that the company refused or neglected to increase the accommodation by constructing new works as were required for that purpose. An application that an existing station used for the purposes of public traffic should be provided with all necessary appliances for working the traffic, so far as it might be in the power of the company to provide them, appeared to us to be an application coming within our jurisdiction, and as the deficiencies of the Hastings and St. Leonard's stations were clearly proved, and to large extent admitted, we gave judgment accordingly (May, 1878), and described the order which we should make, to secure to passengers at those stations better accommodation in respect to waiting rooms, platforms, ticket offices and covered spaces for shelter. We were not prepared to make any order as to goods, because what was wanted for that traffic was more ground, and it was sufficient answer to the alleged contravention of the Act of 1854, with reference to facilities for that traffic, that the company had no power under its existing acts to acquire more land. We recommended, however, that the company should apply to Parliament for such power, and we also, with reference to complaints of the difficulties of ingress and egress at both stations, pointed out how much it would lessen those difficulties if the parties before us were to agree, as they had power to do, to make certain arrangements for the use, by the public, of some of the roads leading to the stations; but the opinions we expressed on these points were intended as recommendations only, and not as directions, or for parts of any order. The main question which was raised upon the decision, and which came before the Queen's Bench Division and the Court of Appeal, was as to the sense in which the Act of 1854, section 2, imposed on railway companies the obligation to "afford facilities for receiving, forwarding, and delivering traffic." Are the requirements of the act, was the question, satisfied by traffic at a station being as well managed and worked as is possible, taking the station as it is; or where the works and buildings of a sta-

tion are insufficient, and the company has power to make the structural alterations or additions that are necessary, is it a contravention of the act if they are not made, and have we jurisdiction on complaint to order them to be made? In the Queen's Bench Division (App. III.) the judges differed in opinion on this general question, but a majority of the Court took the view that the word "facilities" was limited to the details of traffic management, and that we were not empowered to specify the conditions as to accommodation, which the structures of a station must be capable of satisfying. The decision, however, was reversed on appeal, the Court of Appeal (App. III.) pronouncing in favor of the larger and more liberal meaning of the word "facilities," and being of opinion, to quote from the judgment of the Lord Chancellor, "that a company does violate and contravene the Act, if, having sufficient powers, it keeps its platforms, booking offices, and other structures at any station in such a condition as to space and other arrangements as to cause dangerous or obstructive confusion, delay, or other impediment to the proper reception, transmission, or delivery of the ordinary traffic of that station, whether consisting of passengers or of goods."

It seems to be now well established by the judgments given in these cases that Section 2 of the Traffic Act, 1854, is to be construed as distributable into three branches, the first making it imperative upon a railway company to afford all reasonable facilities to traffic using its railway, the next guarding such traffic from undue prejudice or unequal

treatment, and the third providing in effect that through traffic, or traffic passing over the railways of two or more companies, shall be carried in the same manner, as far as possible, as if only one company was concerned in carrying it. The Tharsis Sulphur & Copper Company, Limited, and others, vs. the London & Northwestern Railway Company was a case falling under the first of these branches. It was a complaint that the company were remiss in supplying wagons to convey the ore traffic of the St. Helen's Railway from the port of Garston inwards, and that the deliveries of ore to the consumers and the discharge of vessels with ore in dock were delayed in consequence. The complainants were partly importers of the ore, owning or chartering ships, and partly manufacturers at Widnes or St. Helens. There had been occasionally and not unfrequently short supplies of wagons previously, but during several months from September, 1879, it continually happened that there was a much smaller number available to be loaded with ore from the ships than was wanted for carrying on the trade with regularity and dispatch. This was admitted by the railway company, but it was urged in explanation that at that particular time the traffic of all their lines rapidly and largely increased, that their stock on hand was not sufficient to carry it all, that as far as they had means of conveyance at disposal they apportioned them fairly over their whole system, and that the St. Helen's Railway was only like their other railways in not having its requisition for wagons, for the time, fully met. But the duties of railway companies vary like their powers, and are not uniform for all their railways; and it was specially provided by the act under which the North Western Company acquired the St. Helen's Railway that the company, when requested so to do by any person occupying works or manufactorys adjacent to and having sidings connected with the railway thereby transferred, should at all reasonable times and with all due diligence provide wagons proper and sufficient for the conveyance of all traffic passing exclusively on those lines, except coal, slack and refuse material. It was contended that the general duty cast upon railway companies by the Traffic Act, 1854, would, in any case, have made it a reasonable thing that the company should keep the applicant traders duly supplied with wagons, but that considering there was a special act expressly ordering the particular facility in question to be afforded, the obligation to afford it under the Traffic Act was still stronger. We thought this was so, and that whether or no the company would have had a good defence had there been no specific duty in the case, they had none under the circumstances. The applicants were able to show that their works and the traffic for which wagons had failed to be supplied were such works and traffic as the special act had in view, and it appeared to us that as to such traffic the duty of the railway company under the Traffic Act, in respect of providing wagons, went beyond their general or ordinary duty in that respect, and that, having regard to the provisions in the special act, wagons for service on the St. Helen's line might properly be demanded, even in circumstances which would excuse a deficient supply of them in the case of other lines.

It will be observed that, as far as our jurisdiction went, the applicants had no direct remedy upon the special act against the railway company, and we think it would be found convenient if, where a traffic duty is imposed upon a railway company by a special act, we were given the same powers to enforce its performance that we have to enforce the observance of the provisions of the Traffic Act. A provision of this kind in a special act is often an agreement made in consideration of the bill not being opposed, and it would probably be found very useful in preventing a breach of contract in such cases, to make the proceedings by injunction applicable to them.

In the case of the Dublin Whisky Distillery Company and others vs. the Midland Great Western Company, the plaintiffs demanded a connection between their siding and the company's line in a manner which the latter deemed unsuitable, and they also opposed the application on a question of law as to whether, granting that traffic using the private siding would thereby benefit or facilitate, the facility was of a kind contemplated by the traffic act, 1854. The Commissioners held that the first plea was good answer to the case, and they, therefore, refused the order sought.

In the case of the Holyhead Local Board vs. the London & Northwestern Railway, the applicants sought to make the company erect a foot-bridge over their lines. The commissioners decided not to interfere in the matter.

In Richardson and others vs. the Midland Railway Company, the contention was that the terms on which the company carried brewers' traffic at Newark, principally beer, malt, hops, barley and staves for casks, were so unfavorable, as compared with the corresponding terms at Burton, as to subject the company to the consequences of a non-compliance with the provisions of the traffic act. The company maintained that the advantages given to Burton were no more than a fair consideration for those which they received from the breweries of that district in return. The Commissioners concurred in the main in the company's reasoning, but at the same time were of opinion that there was a considerable part of the traffic and rates in question to which it did not apply, and they decided that on such points the company should discontinue the distinctions which were the subject of the complaint.

The City of Dublin Steam Packet Company vs. London & Northwestern Railway Company was a complaint of the through mail fares between London and Kingstown, via Holyhead, and the City of Dublin steam vessels, as fixed by the railway company, being higher than the through fares the railway company charged between London and North Wall, Dublin, via Holyhead, and their own North Wall steam vessels, and of the difference between the fares causing an undue prejudice to traffic by the mail route. The Commissioners decided that the Dublin Company were not entitled to propose through rates, and that their request must be refused.

Another case upon the subject of undue prejudice was the Denaby Main Colliery Company vs. the Manchester, Sheffield & Lincolnshire Railway Company. The railway company were the owners of canals connecting the South Yorkshire collieries with Hull and the Trent at Keadby, and were authorized to charge tolls for the use of the canals. The authorized tolls were of various amounts, but the maximum payable upon coal was one halfpenny per ton per mile. All the South Yorkshire collieries had the means of sending to Hull by railway, but at least half the quantity of their coal for Hull went by canal, and all the collieries were charged a uniform toll of one shilling and a penny halfpenny, with the exception of Denaby, which was charged a halfpenny less, and the contention in the case was that, having regard to the differences in distance and other respects between Denaby and the other collieries, the toll to Denaby ought to be more than a halfpenny lower. The Commissioners ordered that the toll to Denaby should be kept in about the proportion of 12d. to 13½d. to the tolls of the collieries higher up the canal than it.

In the case of Colman vs. the Great Eastern Railway the applicants contended that certain through rates from their sidings near Trowse to other lines included collection, delivery, and station services, and that as they performed

their own terminal services, they were bound to make a rebate for them. They also required the company to distinguish in their rate-book at Trowse station how much of their rates for the carriage of the applicant's local traffic, i.e. over the Great Eastern system only, which were alleged to be too high, was for the conveyance on the railway, and how much for other expenses. The company did not resist the application when it came on for hearing, and the Commissioners made the order:

"An allowance in future of 2s. per ton to be made to applicants for cartage and terminal services on the through C and D rates. The deduction of 1s. 6d. in the past to be accepted as a settlement by both parties without further claim. Company to consent to an order to distinguish the local rates (i.e., rates between two Great Eastern stations over Great Eastern line) in accordance with Section 14. Applicants to have their cost, to be taxed in the usual way."

James and others vs. the Taff Vale and Great Western Railways was a case in which the applicant sought for an order to make the two companies afford facilities for passengers from Cardiff to the stations on the Taff Vale system. There is a branch line between Cardiff and the Taff Vale line, but owing to disagreement as to terms, no through booking had been arranged, and passengers had, therefore, to walk the mile between Cardiff and the nearest station on the Taff Vale. The Commissioners made the order sought, but the companies had, up to the date of the report, not made the arrangements demanded.

In the case of the Caledonian Railway Company vs. the Greenock & Wemyss Railway Company, the former railway company proposed certain rates for the combined rail and ship route between Glasgow and various seaside places, via their own Glasgow to Greenock Railway, the railway of the Wemyss Bay Company, and steamers to and from Wemyss Bay. The Wemyss Bay Company, who opposed the granting of through rates, objected to the arrangements so made being recognized as sufficient to sustain the application for through rates, contending that they were either invalid, or of a character which the act did not contemplate. As to the vessels of two out of the three steamship owners, the terms on which they were running did not, in the opinion of the Commissioners, make a through communication by them as an integral part of it, one for which through rates could be granted; and, as to the other vessels, though they thought the act did extend to them, they refused the application for through rates because the legality of the arrangement which the Caledonian Company had made with the owners, and on which the application to the Commissioners was based, was disputed by the Wemyss Bay Company on grounds that were not obviously frivolous, and was the point at issue in an action pending at the time before the Court of Session.

Another similar case was an application against the Glasgow & Southwestern, the Caledonian & North British, and the Northeastern railway companies. The Ayreshire Steam Shipping Company were one of the applicants, and they applied for through rates between places on the railways of the respondent companies and Belfast via Ayr and Barr & Co.'s steam vessels. The four railway companies had granted through rates for Belfast traffic to and from places on their railways, if sent via Ardrossan by the steamers of Messrs. Henderson, or via Greenock by the steamers of Messrs. Burns, and one of them, the Glasgow & Southwestern, had also in September, 1880, agreed with Barr & Co. to use the Ayr route, at through bookings and through rates, for Belfast traffic, to and from their Glasgow group of stations. Barr & Co. were already (in September, 1880,) carriers at sea between Ayr and Belfast, and those through rates were established at their request, but neither the Glasgow & Southwestern nor the other companies would grant any more of such rates. The Commissioners refused the application for through rates, but they suggested that it would be for the interest of the public that all steamboat companies should have the same facilities for applying to them for through rates that railway companies have. A side issue raised in the case by the Ayr Harbor trustees, who contended that the railway company's arrangements acted as an undue prejudice to that port, was dismissed.

In the case of the City of Dublin Steam Packet Company, which applied for through rates, the Commissioners held that it was part of the arrangement between the packet company and the railway company, that through rates should be fixed by the latter only, and this being what the parties had expressly agreed, it excluded the packet company from any right they might otherwise have had of requiring traffic to be forwarded at through rates of their own proposing.

The act of 1873, which incorporated the Railway Commission, provides that where any difference between railway companies is under the provisions of any general or special act required or authorized to be referred to arbitration, such difference shall at the instance of any company party to the difference, be referred to that court for decision instead of being referred to arbitration. The Court of Appeal has recently ruled in opposition to the views of the Commissioners that the Railway Companies Arbitration Act was not an act giving power to refer to arbitration, but one providing a way in which the power otherwise possessed might be exercised; and that differences as to which there was no provision in any general or special act, expressly allowing a reference of them to arbitration, were not within the act. Amongst the cases coming under this head was the Central Wales & Carmarthen Junction Railway vs. the London & Northwestern. The points at issue between the companies were as to through rates and booking facilities. Under the decision of the Court of Appeal just referred to, the smaller company had not the power to make the application, but the premier company waived their right to object. The Commissioners decided that the claims of the Central Wales Company as to the principal traffic were outside the agreement, but that their complaint as to passenger and parcel traffic between Swansea and Carmarthen was well founded. They found, however, that the Northwestern Company had not been without excuse for the way in which they had worked the traffic, on account of the two companies differing as to the principle on which receipts from such traffic, if charged for under a system of through rates, ought to be divided between them.

The next case the Commissioners mention is the traders of Clonmel and the Southern Railway vs. the Waterford & Limerick Railway. The principal points in respect of which it was urged by the applicants that the Waterford & Limerick Company failed in the obligations imposed upon them either by the agreement or by the traffic act, 1854, were that they did not make a good connection at Thurles between their trains and the trains to and from Dublin of the Great Southern & Western Company; that they granted facilities for the transmission of traffic between Clonmel and Dublin via Limerick Junction, which had the effect of diverting traffic from the shorter route via the Southern Railway and Thurles Junction, and that they refused to reimburse to the Southern Company the sums they from time to time paid the Great Southern & Western Company for accommodation and services at Thurles Station, and for maintenance of way and works. The Commissioners held that the Southern Company were liable for the cost of maintenance, but that sums payable to the Great Southern & Western Company for working expenses ought to be borne by the Waterford & Limerick Company. They did not interfere with the existing train arrangements of that com-

pany, and they held that that company succeeded also in the main of disposing of the charge that they favored the route via Limerick Junction to the prejudice of that via Thurles Junction, but in one or two of the matters upon which evidence was given under this head they had not, they thought, acted quite properly or as they were warranted, and as to these the applicants were given the redress to which they were entitled.

In the case of the Longton, Adderley Green & Bucknall Railway vs. the North Staffordshire Railway, the first point was whether, in apportioning the gross receipts from traffic exchanged between the lines, the respondent company were justified in deducting, before division, an allowance to themselves for terminal expenses. The Commissioners held not. The other difference referred to the allowance to the North Staffordshire for their expenses of maintaining and using the Longton line. The Commissioners did not agree in the course that the North Staffordshire Company had pursued, and they pointed out in their decision what they thought the proceeding to be to comply with the requirements of the Longton Act.

The Commissioners approved six working agreements under Section 10 of the act of 1873. In the case of the agreement between the Great Northern and the Sheffield railways, the Corporation and Chamber of Commerce of Huddersfield applied to have that agreement modified in the way they represented to be required in the public interest, or to be put an end to. The companies decided to accept the modification, and the Commissioners thereupon approved the agreement. At the instance of the Great Western Company the Commissioners refused to sanction an agreement between the Taff Vale and the Treferig railway companies, but subsequently approved of an amended agreement.

In the case of Amey vs. the Southwestern Railway, the company consented to have an order made upon them for the publication of certain information as to rates, and to pay the applicants' costs. The only other case which the Commissioners think worthy of special note was their inquiry into tolls levied on the Royal Canal (Ireland), which is vested in the Midland Great Western Railway. The Commissioners made certain recommendations, which are set out in the appendix to their report.

Train Dispatching on a Boston Road.

Not long ago, near a station on the Old Colony Railroad only a few miles out from the main depot in Boston, an incoming freight train accidentally had one of its long cars derailed. At the point where the accident occurred the road is double-tracked, and the car was thrown in such a position that it lumbered both tracks, presenting for a time a complete barrier to all outgoing and incoming trains. The methods for action in such cases on the Old Colony, as well as on every well-regulated railroad, are most clearly defined and well understood by the employés; and in the shortest possible time workers were at hand from headquarters, and the wreck in process of clearing. From the time of the accident until first one and then the other track had been cleared, only a small number of minutes was consumed; the tracks were repaired, and matters soon resumed their usual routine. A slight incident in railroad affairs, one will say, and hardly worthy of detailed mention.

But, when the lives of men, millions of dollars in property and myriad interests of humanity are included and concerned in one economical system, details, be they ever so minute, are never trivial or uninteresting. The immediate consequence of that little accident to a freight train, although not apparent to those nearest the scene of disaster, were as far reaching as the Old Colony system, and included detailed working on every part of the road, while at the same time they called into exercise the utmost vigilance and experience of the headquarters of the road. Here was an emergency which would prove the value and utility of the methods of management of the road, and demonstrate whether or not these methods were sufficient for its government under all circumstances. As the general subject of here a little further pursued.

By this apparently unimportant accident, 55 trains, of various grades and qualities, were within a few minutes' time brought to a standstill upon different parts of the Old Colony system. These were express and accommodation passenger trains, express and time freights, regular and irregular trains, passenger, freight and mixed, some wild trains, gravel and construction trains, and, possibly, some excursions. It will be observed that the accident occurred near the main depot in Boston, at a point where outgoing and incoming trains to and from every part of the system are passing every few minutes during the day. It was a point toward which trains near and remote were hurrying, and which must be passed by all trains bound outward to any division of the Old Colony service.

Now the Old Colony system is about the most complex and cut up of any railroad service in New England—or anywhere else, in fact. Its central points, from which division lines to various sections radiate, are numerous, while its branches, short cuts, loops and feeders are of far greater number. It has about 475 miles of road and not far from 190 regular stations; and on its lines, during the busy portions of the day, between 60 and 70 trains are in motion at one time, crossing, diverging, approaching, succeeding, and, in one sense at least, always hurrying. A very large portion of the road is single-tracked, although its most busy portion is double-tracked.

It will be readily appreciated that to keep so large a number of trains in motion at one time, on the same railroad system, implies a rigid requirement that each train shall be somewhere near a given point of track at a particular moment; and that somebody in interest must know all about these trains and points, and be able intelligently to control with exactness almost every movement on every part of the system at all times. And this is precisely the case; and the train-dispatcher is the man. Since the perfection of the telegraph, and its application to the systems of daily life and business, railway trains are almost universally run by it, although its use is supplemented by time-cards, and usually the most elaborate system of rules and regulations that can be devised, the peculiarities and experiences of each road causing some little variations to suit circumstances and surroundings, while generally the methods and practices do not differ widely.

The train-dispatcher then, sitting at the telegraphic instrument at headquarters, with a number of assistants in corresponding positions to make the service complete, is king of the situation all the day long, so far as the movement of trains on the lines of his company is concerned. In every important station (and nearly all are reckoned important in this sense) on the lines there is also an instrument and an operator present or near at hand in many of them during day and night, and always by during the movement of trains that should pass that way. The rules for these operators are "cast-iron," as are also those for conductors and engineers, and it is a rare combination of circumstances indeed, which is not covered by the directions for the actions of all these worthies.

Following out the instance of the Old Colony: In the early morning hours trains from the country arrive thickly,

and outgoing trains are almost as plenty. At corresponding hours in the evening this preponderance of trains is again noticeable; while in the intermediate hours of the day the tide flows usually not quite so strongly. In the train-dispatcher's room is a chart, made up of perpendicular lines drawn upon a great paper sheet, every line and space indicating a minute of time, the lines so close together that the indications for an hour occupy but one and three-eighths inches of space altogether, measuring across the lines. Horizontal lines cross these time lines and spaces, so arranged as to represent the exact number of miles from the main station of the subordinate station. On some roads these perpendicular lines are five minutes apart; but on the Old Colony lines each perpendicular line and intermediate space represents a minute, as stated above. The chart is large enough to represent consecutively every hour in the day, minutes being designated regularly by tens at the top of the chart, and stations and miles and fractions of a mile upon its sides, opposite the horizontal lines, as well as at regular mile intervals.

Knowing, then, the time of departure of a train from any point, say from Boston, the dispatcher notes its progress. Following thus the direction of a passenger train leaving Boston at precisely 8 o'clock a. m., he sees it pass through the horizontal line representing Neponset station exactly 11 minutes from Boston, and by reference to the figures on the side, next the Neponset line, 4.75 miles distance from Boston are indicated. But, at 8 o'clock, the starting moment above set forth, there left a train from Crescent avenue, 2.21

miles from the scene of the accident. The conductors jump to the platforms; critically examine watches; receive, without a sign of impatience, the low spoken communication of the telegraph operator; pass a word or two with the engineer, and disappear into some cubby or corner beyond the ken of station loafers or waiting passengers. The fireman seizes an oil-feeder or a handful of waste, slinging, meanwhile, a few gags at the switchman, with whom he usually has some unsettled accounts in the way of practical jokes, which may be enlarged, or perhaps contracted, if the wait is a long one.

One thing is noticeable at all these stations and among these waiting employees: There is apparent no disposition to rebel, nor even growl too loudly at fate. If it is desirable in a soldier or a sailor that he should know how to obey orders implicitly, it is the grand "must be" of the railway train official or hand. Wherever the track is single, and trains are moving both ways, such stoppages as above accounted for are of life and death significance, and so, indeed, the railroader well knows. In these days the train official rarely moves without orders, and the system of orders is such that they can rarely be misunderstood or misapplied.

An idea may thus be obtained of the confusion caused by even a slight stoppage of a single train at a given point. Two or three minutes of delay to any train must inevitably, during most hours of the day, derange the system in many parts, while an hour's waiting demoralizes the whole line. It might be interesting, if space would here permit and the

wild wherever and whenever they can be sent out, and visiting every section of the line. But, wild or regular, express or time, whatever the condition or degree of all these trains, the train-dispatcher regards them as moving comets which must never be allowed to collide. That he is so successful in preventing collision is simply wonderful.—*Boston Herald*.

Howe's Locomotive Grate-Raker.

The illustrations herewith represent an arrangement for clearing the fires of locomotives of ashes and clinkers, and is intended to be used in place of a shaking grate. It is shown in its simplest form in figs. 1 and 2, which are longitudinal and transverse sections of a fire-box for burning bituminous coal. The grate bars *A A* are of the "water-grate" or tubular form, and are simply heavy wrought-iron tubes screwed into the fire-box plate at the front end and calked at the back end, thus giving communication with the water spaces and allowing the water from the latter to circulate through the tubes. The rake consists of the series of *U*-shaped prongs *B B* attached to transverse bars *C C* below the grates. These are bolted or riveted to longitudinal angle-iron bars *D D*. These angle-iron bars are supported on the arms *E E* attached to the horizontal shafts

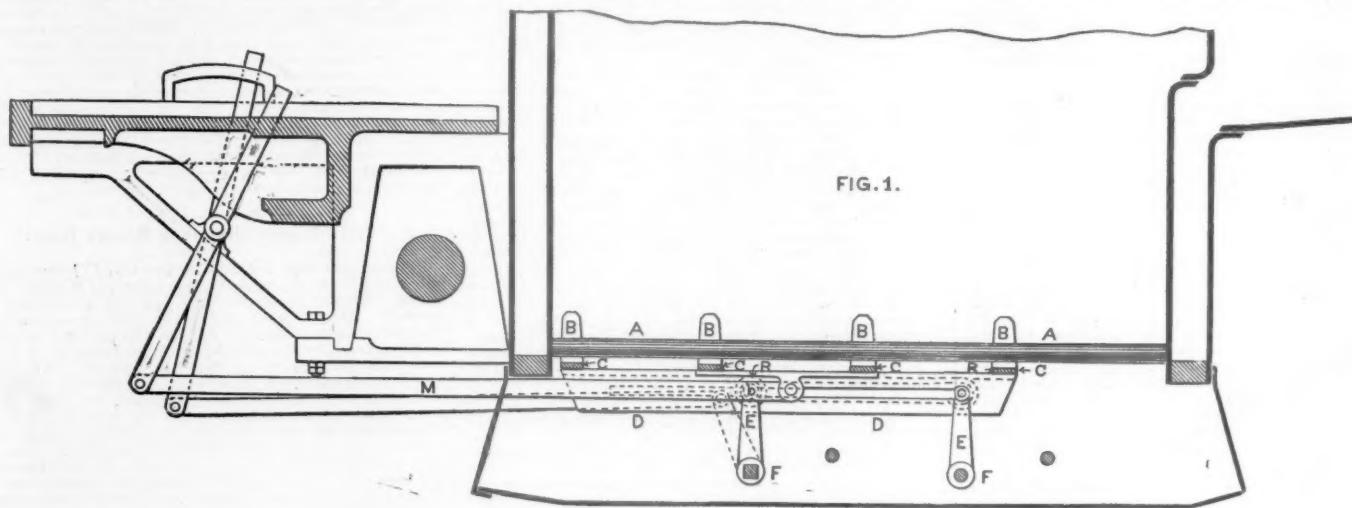


FIG. 1.

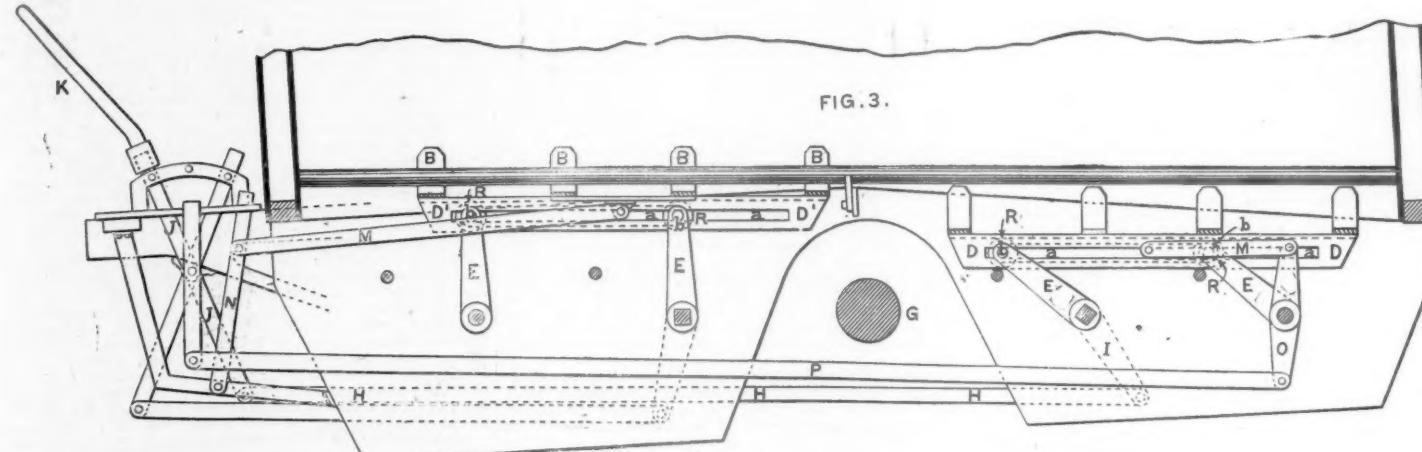


FIG. 3.

HOWE'S LOCOMOTIVE GRATE-RAKER.

miles from Boston, and another from Atlantic, 5.85 miles from Boston, both the last named being bound for Boston. In fact, by the time the train first mentioned (as leaving Boston at 8 a. m.), has got 10 minutes out from Boston, it will occupy the section of the road between Boston and Neponset with three other trains, three moving inward toward Boston, and itself speeding outward.

And this increase of companionship continues throughout its course, until, as has been indicated, between 60 and 70 moving trains occupy the iron at different points at the same time. Now the dispatcher, sitting at his post, sees that these moving trains must meet or pass each other at one of these time lines or spaces, and just so far from one of the stations, and his chart indicates exactly where and when the meeting will take place, provided everything is in exact working order on every part of the lines. If the road is double-tracked, trains may pass each other between stations; if the track is single they must pass at stations, or by the use of sidings or turn-outs.

Now, referring back to the opening statement of this writing, note the confusion caused by the blocking of both Old Colony tracks, at a point so near Boston, where business is heavy nearly all the time. The nearest approaching trains to the scene of the accident must be stopped at once. If they are dangerously near the blocked track, a flagman sent out for the purpose from the train meeting with disaster will stop them on the open track; and one may be sure that the flagman departed on his important errand the moment the lumbering freight car turned tail upon the tracks. Should an express train, flashing past stations at two-minute gait, be next in order, it will be brought up standing at the nearest station before the accident is five minutes old, checked by a red flag or signal displayed by the station agent, who was moved to such enterprise by a clicking command of the train-dispatcher at headquarters.

And now, thick and fast the orders fly. More than 150 private telegraph operators are at their posts, noting, with practiced eyes and ears, every indication of the subtle messenger they manipulate. Clanking, clattering freight trains roll into stations, and incontinent roll out again upon sidings behind old buildings or wood piles. Passenger trains come puffing up, creating a stir in depots 5, 10, 20, 50

details could be collected, to show *Herald* readers how many trains are thrown out by the detention during two hours of an express train bound from St. Louis to Boston, the detention taking place in the first 100 miles of its progress. But the matter is illustrated imperfectly above.

The obstruction of the tracks having been removed, the train-dispatcher sets in motion again his demoralized flyers, watching, one may be sure, with an absorption of attention and intensity of concentration little dreamed of in ordinary employments. A minute too soon or too late with this or that train; a blundering order, or one not quite definite; the mistake of a minute or a mile—how many contingencies hang upon his knowledge and action! Not exactly a position in which to place a tippler or a thickhead, nor are such ever found therein.

During the wait the impatient passenger, seated in his comfortable car at some way station, grows restive as the moments wear away, frets his soul according to his make-up or disposition. The slowest road in the world! "this thing happens regularly every day now" (he may not have waited three times in a year). "Miserable management!"

"Conductor, how much longer are we to stop in this forsaken hole?" "This comes from having no competition!"—the song is varied, but all the time unmusical and dismaly minor.

Could these passengers get a glimpse of the waiting trains posted in 50 other equally dismal localities; could they take account of the really distressing events actually occurring by this unavoidable, but no less vexatious, delay, the connections lost; the mourners delayed; the sick moaning in pain; the important engagements frustrated and transactions deferred or destroyed, how miserably selfish might their own foolish and senseless grumbling appear. Above all, could they be made to see clearly what might ensue, should a careless or incompetent train-dispatcher send them forward a moment too soon, a lesson worth improving might be imparted.

During the nights the freight trains kite about, trailing their lengths around curves and over grades, clattering through towns and villages, a minister of nightmare to others than the train-dispatcher. In the day time many of these erratic wanderers take their chances, like the coal trains from the Somerset yards of the Old Colony, running

F F so that they can be raised or lowered, as shown in figs. 3 and 4, which represent the arrangement applied to a long fire-box for burning anthracite coal. In this case one of the driving-axles *G* is below the fire-box, and therefore the raking arrangement must be divided into two sections, as shown in fig. 3. The one section on the left is represented in the position it occupies when raised up, and when the prongs *B B* engage in the spaces between the grate-bars. The section on the right is shown as it appears when lowered down, the movement of the arms *E E* being somewhat like that of the links of a parallel ruler. This movement of the right-hand section is effected by means of the rod or bar *H H*, which connects the lower arm *I* with the lever *J J*. The latter is operated by means of the detachable lever *K*, which has a socket at the lower end which fits in the upper ends of any of the other levers shown.

The angle irons *D D* and *D' D'* rest on rollers *R R*, and the former also have long slots *a a* in them, in which the pins *p p* by which they are connected to the arms *E E* can slide. The left-hand section, in fig. 3, is connected by a rod *M* with a lever *N*, which is operated by means of the movable handle or arm *K*. By this means the angle-irons *D D'* and their attachments can be moved backward and forward, and thus rake out the spaces between the grate-bars in the most thorough manner. The section in fig. 1 is operated in a similar manner.

The right-hand section in fig. 3 has an intermediate arm *O* and rod *P*, whose operation will be readily understood. Of course, when the rake is not used it is lowered down, as shown on the left of fig. 3, and is then removed from the fire, and is in little danger of being injured by its heat if the ash-pan is kept cleared. The arrangement has the advantage that the fire can be cleaned with the furnace door

closed, and while the engine is at work, if need be, and without any danger of lowering the steam pressure.

It is claimed that trials have shown a very material saving of fuel by the use of this arrangement, besides the following other advantages:

1. It lessens the work of the fireman.

2. It saves the fire-box plates, as they are not exposed to so sudden and great changes in temperature as when the fire must be cleaned through the open furnace door.

3. It preserves the ash-pans, which are not filled with burning coal, as they often are when the fires must be cleaned in the ordinary way.

4. It permits the use of an inferior quality of coal.

It has been applied to locomotives on the Delaware & Hudson and the Delaware, Lackawanna & Western railroads, and we have heard it highly commended.

The inventor is Mr. T. B. Howe, and the patents are controlled by Messrs. Howe & Lee, whose address is Post-office box 481, Scranton, Pa.

Carrying Capacity of Freight Cars.

The following circular has been issued by the Committee of the Master Car-Builders' Association on Capacity of Freight Cars:

At the last annual meeting of the Master Car-Builders' Association, the undersigned were appointed a committee to obtain information with reference to the carrying capacity of freight cars, and to obtain the opinion of railway officers as to the advisability of increasing that of freight cars above 20 tons.

It is only a few years since freight cars were allowed to be loaded with more than 10 tons. At the present time but few eight-wheel cars are built with a carrying capacity of less than 20 tons. From this fact we infer that 20-ton cars can be run as safely as 10-ton cars, and that freight can be transported with greater economy in cars that have the greatest carrying capacity.

The increase of freight traffic upon our leading railroads during the last five years has been very large, and if it had been necessary to transport it in 10-ton cars, the expenses for motive power and trainmen, cost of maintenance of the greater number of cars, etc., would have been enormous. Road-beds and bridges are made more substantial than in former years. Locomotives have of late been made of enormous weight and power, and are so successful and satisfactory that railway managers still continue to build them. If these heavy locomotives can be run without serious injury to road-beds and bridges, are there any objections to increasing the load of freight cars? There are so many advantages to be gained thereby, with so few and trifling objections.

The following are considered a few of the most important advantages that may be derived in transporting any given amounts of tonnage, in 30-ton cars:

Less cost of cars.

Less cost of repairs.

Less dead weight.

Less number of waybills to make.

Shorter trains, shorter side tracks.

Less coupling and uncoupling of cars and damage to draw-bars and fixtures.

Less number of brakes to operate.

Less number of journal-boxes to oil.

Less number of wheels to inspect.

Less trainmen, and many other smaller advantages.

The following table, showing the number of 10, 20 and 30-ton cars to transport 1,000 tons of freight, with cost of cars, weight, length, etc., will show the great economy in the use of cars having the greatest carrying capacity. The cars taken are box-cars:

TONNAGE.		Number of axles	
		Number of brake-shafts, levers and connecting-rods	
Tons.	Tons.	Tons.	Tons.
1,000	10	100	1,000
1,000	20	50	550
1,000	30	84	412

CAR CAPACITY	Number of journal-boxes	Number of journal-boxes	Number of draw-bars		Number of draw-timbers and fixtures	Number of draw-timbers and fixtures	Number of brake-beams	Number of brake-beams
			Number of bolster and draw-springs	Number of bolster and draw-springs				
Tons.	800	800	600	200	400	800	200	900
20	400	400	300	100	200	400	100	450
30	272	272	204	68	136	272	68	306

Address replies to C. A. Smith, No. 113 Liberty street, N. Y. To enable the Committee to have their report printed prior to the annual meeting, an early reply is requested.

C. A. SMITH,
Union Tank Line, 113 Liberty street, N. Y.
J. N. MILEHAM,
M. C. B. of N. Y., L. E. & W. R. R., Jersey City, N. J.
C. E. GAREY,
M. C. B. of N. Y. & H. R. R., Morrisania, N. Y.

In order to make a report on this subject, the Committee are obliged to obtain information with reference thereto, from practical railroad men. They will, therefore, be greatly obliged if you will give your opinion upon this matter and answer the following questions:

1. Have you found any difference in the wear or breakage of wheels under 10 or 20-ton cars?

2. Are the wheels under your 20-ton cars of greater weight than under 10-ton cars? If not, do you think they should be?

3. Have you found any difference in the wear of journal bearings, upon 10 and 20-ton cars?

4. Have you found that journals under 20-ton cars wear out faster than under 10-ton cars?

5. Have you had more hot boxes under 20-ton cars than under 10-ton cars?

6. Have you found it necessary to use more expensive oil upon 20-ton than under 10-ton cars?

7. Have repairs to draw-bars and fixtures and other repairs under 20-ton cars been greater than to 10-ton cars?

8. Do the bodies of 20-ton cars show greater deflection from their original lines than 10-ton cars?

9. Have the 20-ton cars increased the repairs to the road-bed, rails or bridges?

10. In your opinion, can freight cars of 34 and 40 ft. in length be run as safely as shorter cars?

11. In your opinion, can the carrying capacity of freight cars be increased from 20 to 25 or more tons with greater economy than to carry freight in 20-ton cars?

12. If the carrying capacity of freight cars should be increased to 30 tons, would you recommend journals and axles to be made larger than the master car-builders' standard, and that wheels be increased in weight?

13. Can a locomotive draw 1,000 tons of freight over your road, in 20-ton cars, with greater economy than in 10-ton cars?

Railroad Building in Idaho.

A correspondent of the *Portland Oregonian*, writing from Sand Point on Lake Pend d'Oreille, gives the following account of the work on the Northern Pacific in that neighborhood:

It would be difficult to give persons accustomed to the humid atmosphere of the Willamette a just conception of the rigors of the past season in this climate, of exceptional severity. The thermometer has ranged for quite long periods at from 10 to 20 degrees below zero, the snow covering the earth to an average depth of five feet upon the level; while the not infrequent blasts of ice-

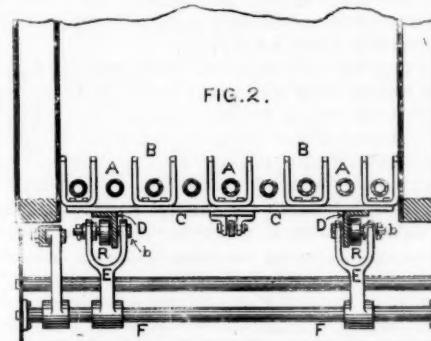


FIG. 2.

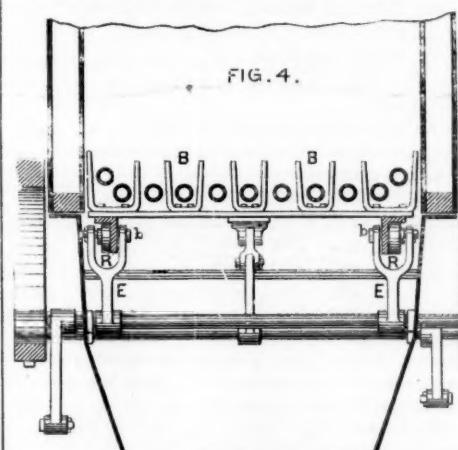


FIG. 4.

the Superintendent of Construction upon this division, who not only did not for a moment cease active operations, but with a masterly hand has graded during the past winter nearly 25 miles of road bed, of which nearly 3 miles were through a continuous section of rock cuts of equal magnitude to those upon the Columbia River between the Dalles and Cascades; while there has been driven over 3 miles of bridge piling. Of this class of work, one section alone, that crossing the lake, over which the track was laid some two weeks since, is the longest pile bridge in this country—being 8,425 ft. in length. The structure is composed of 3,000 piles, ranging from 50 to 110 ft. in length, 1,300 stringers, 32 ft. in length, and 1,500,000 ft. of other timber. The bents are of 5 and 6 piles each, with X and double-deck web bracing. It is provided with a draw and guards or piers as a protection against floating ice. A close inspection of this immense work reveals thorough workmanship and strongly impresses one with its massive strength. Long lines of flat cars heavily loaded with iron and other construction materials passing over it at intervals every day cause no perceptible vibration upon any portion of the structure.

The next largest work of this character upon the line is at the crossing of the mouth of Rock River. This bridge is over 7,000 ft. in length, and is now fast nearing completion. When it and a number of smaller trestles, upon which a largely increased force of carpenters have recently been added, are completed, the track will be laid to near the mouth of Clark's fork.

Taking into consideration the weather, 25 miles of construction, nearly all of which was accomplished during the dead of winter (the worst known to have been experienced in this section), is a feat without a parallel in the history of railway construction in this country; and, moreover, will prove of immense advantage to the company, inasmuch as aside from the mileage already constructed, it is equivalent to a gain of two months' time in the progress of construction by having this portion of the line completed before the setting in of the spring freshets, which cause the waters of the lake and near the mouth of Clark's Fork to raise from 20 to 30 ft., inundating the country surrounding for many miles. These freshets usually occur about the last of May or fore part of June, by which time, however, even at the present rate of construction, Superintendent Hallett will have completed the grading of the road bed across the line into the territory of Montana.

Owing to the great depth of snow covering the ice on the lake the recent spell of mild weather could at first only slightly affect the lower or under surface of this solid crust — eighteen inches in thickness. However, this favorable opportunity was promptly taken advantage of by Superintendent Hallett, who at once placed gangs of men at work, equipped with saws and blasting materials. By persistent effort in one week's time a channel was finally opened for a distance of nearly five miles, reopening navigation to all parts of the lake on March 21. This will prove a measure of much economy to the company, besides facilitating the handling of heavy material, towage of pile drivers, etc., to the Clark's Fork section.

With recent additions, the construction force now numbers 3,500. The general health of the men is excellent and all are contented, notwithstanding the severe winter's siege they have just undergone. The present mild spell of weather, although productive of much mud in the work of grading, has immensely stimulated every branch of constructive operations. No less than seven pile bridges are now undergoing construction and rapidly nearing completion. Seven pile-drivers are at work. Pile-driving at the mouth of Clark's Fork is proceeding at the rate of nearly 100 piles per day, and will soon progress with much greater rapidity.

Transportation in Congress.

In the Senate on the 13th: Mr. McPherson, of New Jersey, introduced the following, prefacing it with the remark that he introduced it by request, and without committing himself in its favor:

"Whereas, The interest of the United States demands a direct railroad from the State of New Jersey on the Atlantic, via Omaha, to California on the Pacific, to aid in destroying an existing gigantic railroad monopoly, through which may arise unchecked a money power dangerous to liberty: and

"Whereas, Arrangements are maturing in Europe for a syndicate to build said road, whereby no subsidy is required from Congress; and

"Whereas, The Overland Railroad Construction Co. has been incorporated under the laws of New Jersey, upon a proposed capital of \$150,000,000 mortgage bonds and \$150,000,000 in shares, to construct the said railroad; and

"Whereas, The aid of the United States is needed for the right of way through the public domain; therefore,

"Be it enacted, etc., That the said Overland Railroad Construction Co., of New Jersey; W. Cornell Jewett, of the United States, now of Paris, France, and his European financial associates; James Bowman, of the United States, and his United States associates, are hereby authorized to lay its tracks and telegraph lines over any portion of the territory of the United States that may be in its line for that purpose, and shall have the right of way for 200 ft. on each side of the track where the same crosses the public domain, and to use in the construction of its road, stones, timber and such materials as may be necessary off the public property, provided the same does not interfere with any government reservation of any lands to which the right of homestead and pre-emption may have attached at the time said line is located. The said Overland Railroad Construction Co. and associates shall exercise and enjoy in the territories of the United States such corporate powers as are granted by the state of New Jersey, where its domicile is."

In the House on the 13th:

Bills were passed, giving the Utah & Northern road right of way across the Shoshone and Bannock reservations in Montana, after paying the Indians for the same; appropriating money to pay amount due the Burlington, Cedar Rapids & Northern Company for transportation of mails.

In the Senate on the 17th:

The bill for the improvement of the Mississippi and Missouri rivers on the plans of the Mississippi River Commission was discussed, but no action taken.

In the Senate on the 18th:

A message was received from the President recommending an immediate appropriation for the improvement of the Mississippi.

Senate bill to accept and ratify an agreement with the Crow Indians for the sale of a portion of their reservation in Montana territory required for the use of the Northern Pacific Railroad, and appropriating \$25,000 therefor, was passed.

A Bureau of Information.

A new office has been opened in the Pennsylvania Railroad station in Philadelphia. On it is the sign, "Bureau of Information," and at the open window stands a baird man, ready to answer all manner of questions about travel on the Pennsylvania and connecting lines. Whenever he gets stuck by a hard query he uses the telephone or telegraph to get the right reply. This is intended to relieve the other employés and accommodate the passengers.



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed to the EDITOR RAILROAD GAZETTE.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

THE CINCINNATI, HAMILTON & DAYTON.

About a year ago it was announced that the Chicago, Hamilton & Dayton Railroad had been secured in the Vanderbilt interest and would be worked in close connection with the Cleveland, Columbus, Cincinnati & Indianapolis. In September an agreement was completed for the consolidation of the two companies, and though an injunction was obtained by the Erie interest to prevent the consummation of the consolidation, officers of the "Ohio Railway Company" were duly elected. Later the Ohio courts decided the consolidation invalid. This however did not necessarily prevent the Vanderbilt control. It is to be assumed that when a majority of the stock voted for consolidation with the Cleveland road, it was either because a majority had been purchased by the Vanderbilt interest, or because the holders of a majority believed it for their interest to attach their road to the Vanderbilt system. To work it as such consolidation would be a convenience, but that is all. A, B and C could be chosen directors of the two companies and work the roads substantially the same as if they were the officers of a consolidated company owning both roads.

It was, therefore, with some surprise that the news was read a few days ago that a majority of the stock of the Cincinnati, Hamilton & Dayton had been bought in the interest of the New York, Lake Erie & Western Company.

The Cincinnati, Hamilton & Dayton Railroad proper is a very small road, including only 59½ miles from Cincinnati northward to Dayton. It is, however, only a stem by which several larger lines, which it has leased, enter Cincinnati. These are the Dayton & Michigan, 140½ miles, from Dayton north to Toledo; the Cincinnati, Richmond & Indianapolis, from Hamilton, O., northwest 42 miles to Richmond, Ind., and the Cincinnati, Hamilton & Indianapolis, from Hamilton northwest 98½ miles to Indianapolis, so that the whole system worked includes 341 miles of road—or a line 202 miles from Cincinnati a little east of north to Toledo, a line northwest to Indianapolis, and a short line northwest to Richmond, which can be used as part of a short line between Chicago and Cincinnati by the Pittsburgh, Cincinnati & St. Louis (224 miles from Chicago to Richmond and 70 from Richmond to Cincinnati).

These roads were not directly important to the Lake Shore and the other Vanderbilt roads; that is, they did not give them access to any important traffic centres not otherwise reached, and only the Dayton-Cincinnati line can be used to any advantage as a through line in connection with any of the Vanderbilt roads, and it runs nearly at right angles with the Lake Shore, and is a much longer route to Cincinnati than that by way of Cleveland and the Cleveland,

Columbus, Cincinnati & Indianapolis. (Cleveland to Cincinnati, 315 miles via Toledo, and 244 by the Bee Line.) But if it could not be made directly advantageous to the Vanderbilt interest, it could be managed to hinder the development of rival roads; and, moreover, in connection with the Vanderbilt lines north of Toledo, it completed a north-and-south line no less than 557 miles long, from the Straits of Mackinaw to Cincinnati—a line longer than that from Cairo to New Orleans, from Cincinnati to Atlanta, from Louisville to Montgomery, and as long as from Chicago to the Alabama line. Long north-and-south roads, however, in this part of the country have not much importance as through lines. The part of the line south of Toledo, doubtless, carries a great deal of lumber from Michigan southward, but, as a rule, the traffic originating on this long line from Mackinaw to Cincinnati moves eastward and westward—not northward and southward. That in Michigan is prevented by the lakes from moving directly east or west; but that in Ohio tends to leave the north-and-south road at the first cross-road. The Dayton-Cincinnati line, in the control of the Vanderbilt interest, could be made to feed the Cleveland road and the Lake Shore very conveniently; but most advantageously with local traffic only. Shipments from Cincinnati to the East would find a more direct outlet by way of Springfield; shipments to the West and Northwest could use the Indianapolis and Richmond lines if a combination were made with other companies; but this traffic is not large.

The Erie will be able to use the Cincinnati, Hamilton & Dayton lines only in connection with the New York, Pennsylvania & Ohio and the new Chicago & Atlantic road, now under construction. It can be much more valuable, directly, to it than to the New York Central, for it will secure the Erie an entrance into Cincinnati, which the Central already had, and will make it possible to utilize the Chicago & Atlantic for Chicago-Cincinnati business, forming a tolerably direct line where the Lake Shore makes a very indirect one. The part of the Dayton & Michigan north of the Chicago & Atlantic, however, will make a very awkward branch of the Erie line, too indirect to do a profitable business between Toledo and the East; and though it would be favorable enough for traffic between Chicago and Toledo, that is of little account, because the traffic (stopping or originating at Toledo) is insignificant.

The most valuable connection can be too dearly bought, however. One report is that control is secured by the gentlemen purchasing in the Erie's interest \$2,300,000 of the \$3,500,000 of Cincinnati, Hamilton & Dayton stock at par. But we see no confirmation of this report. The stock covers not only the 60 miles of road owned by the company, but also all the stock of the Cincinnati, Hamilton & Indianapolis Company and \$700,000 of its bonds. But as this road has never earned the interest on its bonds these securities cannot be counted as particularly valuable assets. It also covers the leases of the three roads named, but the leased lines in the aggregate only earn their rentals, even in favorable years, and they are valuable chiefly as securing traffic to the 60 miles of road owned between Cincinnati and Dayton. The final test of value of the shares must be the past, present and prospective dividends. Now the dividends paid on the \$3,500,000 of Cincinnati, Hamilton & Dayton stock were very satisfactory until 1873. For the eleven years ending with March 31, 1873, they had been from 10 to 8 per cent. yearly, and for the last three of that period they were 8 per cent. Thence for the seven fiscal years ending with March, 1880, no dividends were paid. In the next fiscal year 5½ per cent. was divided, 2 the first half and 3½ for the second half of the year. Last year no dividend was paid, but the price went up about to par in Cincinnati at the end of 1880, and of late Cincinnati brokers have quoted it at about 75.

To pay par for a stock on which for nine years past the aggregate dividends have been but 5½ per cent.—to pay at the rate of \$8,500,000 for a property whose income for a period of nine years has been but \$192,500—would indicate that the purchasers have great faith in the prospective value of the property. We must confess that we do not see grounds for faith in any great improvement in Cincinnati, Hamilton & Dayton profits. The country on the lines of the Cincinnati, Hamilton & Dayton Company is well peopled and no longer grows rapidly, and it is not easy to see why it should grow faster hereafter than heretofore. It is very fully provided with railroads, but in spite of this, lines are multiplying which will compete for some of its traffic—the New York, Chicago & St. Louis, the Toledo, Delphos & Burlington and the Chicago & Atlantic itself are such lines. There is no great traffic centre on them where, as at Chicago, an enormous traffic grows rapidly every year. Cincinnati is a large

and prosperous city, but a glance at the diagram in our issue of April 7 (page 209), illustrating the business of "Western traffic centres," shows that it has but one-seventh the traffic of Chicago and but two-thirds that of the little town of Peoria; the census shows that its increase of population from 1870 to 1880 was 18½ per cent., while Chicago's was 68 per cent., Cleveland's 72½, Detroit's 46, and Indianapolis' 55½ per cent. Moreover, the lines are all situated within the territory where through trunk-line rates apply to so much of the freight that they greatly modify and limit the local rates, making it unusually difficult to get a reasonable profit.

On the other hand, the Cincinnati, Hamilton & Dayton possesses an entrance into a large city, and station grounds and connections there, all of which are extremely difficult to get after a city is grown, and often cost millions; and Cincinnati is unusually difficult to enter. Should there be additional lines built to Cincinnati, a considerable rental may be had for this entrance. Further, it seemed the only opportunity for the Erie to secure an independent entrance into Cincinnati. It had, however, an entrance over the Pennsylvania line, which could have been secured permanently, we understand.

It seems now to be useless to attempt to keep any railroad out of an important traffic centre if it desires to enter and is in position to carry a considerable amount of traffic, even if it is a weak company with little credit. The Erie will soon have a road in its own interest into Chicago, the Grand Trunk completed one but a little more than a year ago, the Baltimore & Ohio built a line in about ten years ago, the Wabash elbows its way into Omaha, and the Milwaukee & St. Paul follows it, the Chicago, Burlington & Quincy is moving on to Denver. A road with an immense traffic like the Erie can get done for it what it might find difficult to do for itself. The way to keep a rival line from interfering with western traffic is not to buy up the western roads so that none will be left to it, but to buy the trunk line itself.

DIRECTORS' DEALINGS.

The position of director in any company whose enterprise involves extensive contracts for construction or supplies—in one undertaking a new railroad particularly—is one of peculiar temptation. The opportunities and inducements for manipulating the plans and contracts of the company in such ways as to realize a profit to oneself, instead of laboring solely for the company's interest, are often too great for human integrity. The instances have been numerous, as every one acquainted with the history of railroad building knows, in which the original company has been squeezed, bled, nay eviscerated by its own directors, they pretending to negotiate contracts or make leases or sales on behalf of their stockholders, while they have themselves been the active men to profit, in various concealed ways, by the arrangements they have made. The course of decisions in the courts shows that such devices have little strength to resist an earnest legal investigation; that the law has more power than injured stockholders may suppose, to overthrow such schemes, and restore the assets to their rightful owners.

Railroad directors do not indeed occupy a position materially different from that of like officers of other companies. Though not "trustees" in the strictest, highest sense, they hold the capital, property, plant, franchise, or whatever substantial interests are committed to their charge in a judiciary or trust relation, and are subject to the rule now established over all trustees of property, that the beneficiaries may repudiate any dealings of the trustee, in the estate, in which he has bargained with himself, or for his own benefit. In the early development of corporations more pains was taken to confer powers on the trustees and directors, and to facilitate their ready and safe prosecution of the corporate enterprise, than to guard the stockholders from underhand bargains and ingenious manipulations by the guardians they might choose. It was at first supposed that stockholders would not elect trustees undeserving of their confidence. But experience soon showed that legal checks and guards were needful; and repeated instances of fraud, collusion and self-seeking in the management of various corporate bodies by the governing board led the courts to the view that a director must be regarded as disabled by his position from dealing on his own behalf in the matters confided to him as director. The corporation, or, if it refuses to act, injured stockholders may, irrespective of any specific dishonesty in his intentions, repudiate a contract, lease, sale, or other transaction in which he has occupied the double position of representing the company while acting as or with a contractor, hirer, buyer, or the like. He owes his best services to his company in virtue of his

position as director, whatever may be the terms on which he has accepted it. A decision emphasizing these principles was given in the *Railroad Gazette* of March 10 last. In an earlier and rather remarkable case a bank which had been robbed made a general offer of a reward for information which might lead to detection of the thief and recovery of the money. A director (who, by the way, was serving without compensation) rendered the service desired; but the Court held that he could not recover the reward; to afford all information in his power was a part of his duty as director.

The general principle has been applied to railroad directors specifically in many instructive cases, and under a variety of circumstances. The duty of such director to act for the benefit of the company and as its representative has been repeatedly recognized. He cannot become individually interested in a construction contract on the road, nor in a purchase of property which he ought to buy for the company; and if he makes a contract on behalf of the company, in which he reserves or afterwards acquires an individual interest, such contract may be repudiated on behalf of the company.

Schemes, such as were formerly common, in which a director is openly named as a contracting party with the company, are now generally understood to be unlawful. A more recent form of device having the same general object is for the directors to make the sale, or give out the contract to persons unconnected with the company, who forthwith proceed to organize an independent corporation to take it off their hands; which having been accomplished, the double-acting directors become unnoticed stockholders in the new concern. The stockholders in the original corporation often hesitate to attack a transaction of this nature, fearing that, however unfair it may be in operation, it will be pronounced legal in form. But the courts do not hesitate to set aside even so specious schemes as these.

A striking illustration is found in a case lately decided by the Supreme Court at Washington, which arose during the construction of the Union Pacific Railroad. The land along the line contained large deposits of coal, and as the country (between Omaha and Ogden) was almost destitute of any growth of firewood, it became important that some arrangements for mining the coal should be made. An "executive committee" of the directors assumed to make a contract with Messrs. Godfrey & Wardell, leasing to those gentlemen the coal lands of the company for fifteen years, while they undertook to mine the coal and supply it to the company, for which the company was to pay a fixed price (a liberal one, of course,) per ton. This contract was never submitted to the full board, and was signed on behalf of the company only by Oakes Ames as "President." Godfrey afterward released his interest to Wardell, and Wardell, later, transferred the contract to the Wyoming Coal and Mining Company. In this company a majority of the stock was taken by six of the directors of the railroad company, one of whom was Ames, the very President of the road, by whom, as such, the coal-lands lease had been signed. Thus the net result of this series of transactions was that the President and five directors of the road were, as stockholders of the coal-mining company, drawing pay for supplies of coal which the laborers of the coal-mining company were unearthing from the railroad company's own lands. Subsequently a new directory of the railroad company repudiated the entire arrangement, offering to pay Wardell either a compromise sum of \$100,000, or a fair valuation, for his services and capital employed in taking out such coal as had been furnished.

The Supreme Court fully sustained the railroad company's new position. The judges said that the scheme was evidently designed to enable those of the railroad directors who authorized the contract to divide with the contractor large sums which they should have saved to the company. Their duty was to manage the railroad property for the benefit of stockholders and creditors, and they were not at liberty to use their powers for their personal interest. They could not derive any advantage from a contract made by them as directors, except such as they might realize through this membership of the railroad company; to allow them to do so would violate what is now an established rule—that an agent cannot deal with himself in the affairs of his agency. The facts that an independent coal-mining company was formed, and that the offending directors came into this by arrangements subsequent to the principal contract, were pronounced no defense. "All arrangements by directors of a railroad company to secure an undue advantage to themselves at its expense, by the formation of a new company as an auxiliary to the original one, with an understanding that they or some of them

shall take stock in it and then that valuable contracts shall be given to it, in the profits of which they, as stockholders in the new company, are to share, are so many unlawful devices to enrich themselves to the detriment of the stockholders and creditors of the original company, and will be condemned whenever properly brought before the courts for consideration." The railroad company was adjudged entitled to retake possession of its coal-lands, and Wardell was given his choice between what he might be able to show was the fair value of his investment in the mining business and the \$100,000 offered by the railroad company. He chose the latter.

The above decision was rendered in 1880 or 1881. There have been some similar cases in the state courts. In 1879 a controversy was before the Supreme Court of Nebraska growing out of the affairs of the Nebraska Railroad Company, which company was formed, in 1875, by the consolidation of two previous corporations. Soon after the union was perfected the President of one of the old companies brought suit against the new one to recover the value of services he said he had rendered to his former company in procuring the right of way and promoting the construction and interests of that company. It then appeared that he and the other members of the direction of the former road had committed the entire construction to a company or firm of contractors, Converse, McCann & Co., who undertook the entire charge of the enterprise, agreeing to assume the debts and pay all claims and expenses of the corporation, for which they were to be paid in the stock of the company; also that the President was a member of the firm of contractors, though his name did not appear in the style of the firm. The Court held that under the circumstances he had no possible claim against either company.

Foreign Railroad Notes.

A paper by L. Gruner, of France, on the nature of steel suitable for rails has been very widely published in Europe lately, and, as embodying the conclusions of one of the most eminent of metallurgists, carries great weight. Gruner discusses the questions whether the steel for rails should be hard or soft, and whether the nature of the steel should have any effect in determining the profile of the rails. A large portion of Mr. Gruner's paper is occupied with an analysis of Mr. Dudley's papers before the American Institute of Mining Engineers, and the discussions on these statistics and experience contradict the commonly accepted assumption that the harder the rails the less they wear. There are good reasons found in the methods of rolling why the double-head rails should break less frequently than the T rails. Mr. Gruner's conclusions are as follows:

1. Rails of mild steel, whose resistance to traction is at least 50 kilogrammes, wear less and last longer than the hard steel rails used in France.

2. This more rapid wear of hard steel (rather, impure steel) rails is due chiefly to the greater oxydability of the iron when united with elements such as manganese, silicon and phosphorus; in this respect, as in others, preference must be given to mild steel.

3. The steel of double-headed rails may, without injury be harder than that of T rails, but the singular condition of, rupture under a fall from a certain height should never be imposed, as this is a condition which implies greater impurity of the steel.

4. To avoid the comparative fragility of T rails, the foot of the rail should not be too thin—not less than 8 to 10 millimetres (0.32 to 0.4 in.), and the upper surface of the foot should not form a sort of double longitudinal channel (as some French rails do, the slope from the web half way to the edge of the foot being considerable, while thence to the edge the upper surface of the rail foot is nearly horizontal). In a word, the tempering of the thin parts of the rail at the time of rolling should be avoided.

5. Finally, it is desirable that the railroad companies should agree upon the adoption of a small number of standard rail patterns, and, if they still have any doubts as to the validity of the above conclusions, they should intrust a commission of engineers and chemists with a complete investigation of all the causes that may affect the life of rails, which commission should seek the assistance of the iron-masters.

In a recent issue of the *Annales des Mines*, M. Kossuth (a son, we believe, of the famous Hungarian) published a long paper on the ventilation of the Mont Cenis Tunnel, which seems very much in need of improvement. He recommended a system like that used by mines, fresh air to be driven in through an apparatus to be worked by water-power. A Mr. Pressel has also written a paper on the ventilation of long tunnels. The direction and intensity of the air current in a tunnel are, he says, the product of numerous factors, as the length and dimensions of the work, the difference in level of the openings, the average temperature of the interior, the temperature of the air at the outlets, the pressure and hygrometric state of the atmosphere, the direction and intensity of the prevailing winds. The effect of these latter factors may be to increase or to neutralize the natural ventilation as determined by the difference in level of the outlets. The interior of a tunnel in a mountainous country, beneath a considerable mass, will always be of a higher temperature than that of the outer atmosphere, es-

pecially at night. There will, therefore, be an ascent of the warm air towards the higher parts and an entrance of cold air, the more rapid the greater the difference in the elevation of the openings. But this necessitates an increase of grade, and consequently greater smoke production by the engine, which tends to aggravate the situation, so far as the passengers are concerned. Moreover, an unfortunate combination of exterior circumstances may cause to disappear all the advantages secured by the difference in level and leave only its ill effects. Such is the case at Mont Cenis, where the difference is as much as 460 ft., but where the circulation of the air is extremely slow and often there is no circulation, the smoke moving indifferently in either direction. Mechanical ventilation has not succeeded; the loss of power in the air-compressing machines is so great that they scarcely keep free from smoke the little chambers of refuge cut in the tunnel walls for the use of the trackmen.

Pressel propose, to produce a current of air through the tunnel by maintaining a great difference in the density of the atmosphere at the two ends of the tunnel, which might be affected by condensing the air at one end and rarifying it at the other. This has sometimes been done by building a fire at one end of a tunnel. But Mr. Pressel would cool the air instead of heating it, by the use of water from Alpine streams.

In the course of some comments on our recent comparison of the new Berlin elevated railroad with the New York roads, the *Journal of the German Railroad Union* objects to the statement that probably four times as many men are required for the ticket service in Berlin as in New York, saying that with any ticket system it is necessary to have the tickets examined on entering and leaving the train and during the trips, and that this is all that is done on the Berlin road. Yet this is three times as much as is done on the New York roads, where the passenger buys a ticket at a window and a few feet further on, at the entrance to the station platform, puts it in a glass box under the eyes of the gateman, and that is the end of the ticket inspection. If there were more than one class of tickets and cars the work would be at least doubled, for it would then be necessary to see that those who entered first-class cars had first-class tickets, and if there were different rates for different distances, still more labor would be required, for it would be necessary to see that the passenger did not ride further than his ticket entitled him to, which might be done on the train or by inspecting the tickets at the station where the passenger left the train. But the New York roads are only concerned to make sure that no passenger can get on a train without a ticket; as all tickets are alike, they do not care what car he gets into or at what station he gets off. The largest business of a station is done by two ticket sellers and one gateman.

There are 33 "railroad schools" in Russia for the instruction of employés, established because not very long ago it was impossible to get Russians with education enough to be intrusted with the higher places, and even at this day one-half of all the locomotive engineers in Russia are Germans. Twenty years ago of four road-masters on a line about 25 miles long two did not know their letters, and had clerks to write their reports. Machinists and locomotive engineers were created out of cooks and others who had been in the personal service of the engineers. The schools turn out chiefly enginemen and firemen, road-masters and telegraphers, most of them sons of railroad employés. The course of study extends over three years, with a two years "practice course" in some cases, and there is a preparatory course of one year, probably for those who have not learned to read. Graduates of most of the schools are bound to spend two years at least in the service of the railroad which supports the school. The schools are hardly yet out of the experimental stage. One of the oldest, founded in 1874, has so far 25 graduates in railroad service.

In Wurtemburg for about twelve years past a forester has had charge of the cultivation of the right of way and other lands of the railroads, where formerly the track men had the use of it. This forester gives his first care to so planting the slopes of excavations and embankments as to prevent washing and sliding, and also grows live fences where possible, and where practicable (including some embankments) cultivates various kinds of fruit and timber trees. He also has charge of the gardens at the stations, which are largely devoted to fruit, and so made useful and ornamental at once. For the last five years an average net profit of about \$3.50 an acre has been made on the ground so utilized.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Atchison, Topeka & Santa Fe.—The *Las Vegas Branch* is completed from Las Vegas, N. M., to Las Vegas Hot Springs, 6 miles.

Baltimore & Delta.—Completed from Baltimore, Md., to Towson, 7 miles. Gauge, 3 ft.

Texas & St. Louis.—Track laid on the *Cairo Extension*, from Malden, Mo., southwest to Jonesboro, Ark., 75 miles from Clarendon, Ark., north by east 18 miles; from Pine Bluff, Ark., west by south 20 miles; from Texarkana, Ark., east to Red River, 20 miles; in all, 133 miles. Gauge, 3 ft.

Toledo, Cincinnati & St. Louis.—The *St. Louis Line* is extended from Ridge Farm, Ill., southwest 60 miles. Gauge, 3 ft.

Union Pacific.—The *Kansas Central Division* is extended

from Clay Centre, Kan., west to Mideopolis, 21 miles. Gauge, 3 ft.

This is a total of 297 miles of new railroad, making 1,772 miles thus far this year, against 819 miles reported at the corresponding time in 1881, 996 miles in 1880, 391 miles in 1879, 267 miles in 1878 and 267 miles in 1877.

THE LIVE STOCK AND DRESSED BEEF CONTRACT entered into by the trunk lines and perfected last week is on the same general basis as the freight contract, heretofore described, with modifications to suit the nature of the business. For instance, there is a division for each separate Eastern district, these staples being consumed in this country, and not capable of a diversion from one port to another, like export freights. One of these districts is, substantially, New England, that is, shipments to points east of Albany and Troy, and south of St. John's and Sherbrooke. These shipments are to be divided in certain proportions (to be fixed hereafter by agreement or arbitration, but to cover all shipments after April 16) among the Grand Trunk, the New York Central and the Erie. The Pennsylvania can carry to this district, but is not at first to be one of the parties, but will become one whenever itself or any of the other three roads demands it, and is to maintain rates strictly meanwhile. The shipments from local points on these lines as well as those from their western connections are to be included, which is important, because live stock is frequently consigned to an interior point where there is a yard, and there perhaps sold and forwarded to destination on a new bill of lading. Each road will be entitled to a revenue from this traffic in proportion to its share of the traffic, counting a certain percentage of the Chicago rate for the trunk lines. If its actual shipments at the regular rates amount to less, it will be entitled to a payment in money to balance. Settlements are to be made on this basis whatever the western connections of the trunk lines may bring them, as if they actually controlled such connections, it being the intention (and now agreed by these western connecting lines) that the traffic shall be divided over all the lines between the Western cattle markets and the East.

The shipments to New York are to be divided among the New York Central, the Erie, the Pennsylvania and the Baltimore & Ohio on the same general basis, and the shipments to Philadelphia and Baltimore will be divided as by the contract of 1880 until a revenue division can be made.

The new contract is for a period of five years from April 17 last.

Under the contract of 1880 a division of the cattle and hog shipments, except to New England, was made. This will continue until one of the parties to it demands a re-division, when there will be a new division. Mr. Fink will make an apportionment of the New England shipments directly, which shall be executed for the present at all events; but an appeal may be had to the Board of Arbitration, whose award shall date back to April 17.

The companies are to maintain a joint agent at each shipping point, and on shipments made in accordance with his directions rebates will be paid, on Mr. Fink's order, and in this way it is intended to divide the traffic in accordance with the apportionment so far as possible, so as to make little occasion for money settlements. The latter will be for an assumed profit on an excess of shipments, a certain amount per 100 lbs. for live stock and dressed beef separately being allowed as the cost of doing the work. But a line, to be entitled to payment for the tonnage awarded to it which it did not carry, must accept shipments tendered it when it has less than its proportion, provided that no more be offered it in any one month than the amount of its deficit in the previous month, and that this be offered in nearly equal quantities daily. This latter is a provision of considerable importance, and is included in the freight as well as the live-stock contract, and will require that a road be prepared with rolling stock, etc., to carry its share of the freight.

THE CLEVELAND, COLUMBUS, CINCINNATI & INDIANAPOLIS RAILWAY is one of the lines that usually suffers most from a railroad war, an overwhelmingly large proportion of its freight being through or carried at through rates. The report for 1881, however (an abstract of which we print elsewhere), makes a much less unfavorable comparison with the previous exceptionally prosperous year than might have been expected; there was a slight decrease in earnings, but (which was very uncommon in 1881) there was no increase in expenses, and the falling off in net earnings is but \$54,436, or 3.7 per cent. But the marks of the railroad war are plain enough when we come to detail. With an increase of 1.9 per cent. in through freight, compared with 1880, there was a decrease of 7 per cent. (\$148,911) in through freight earnings, so that but for an increase of 3.8 per cent. (\$4,058) in local freight earnings and of 4.2 per cent. (\$36,470) in passenger earnings, the decrease in net earnings would have been very considerable. The great increase in through freight resulted in a considerable decrease in earnings because the average through rate fell from 0.681 to 0.532 cents per ton per mile—21.8 per cent. On the other hand the average local rate increased 3.2 per cent.—from 1.110 to 1.146 cents per ton per mile—which is not often possible when through rates fall off so. The decrease in the average through rate was caused by six months of railroad war; the current six months will probably show but little improvement in through rates over the last half of 1881—somewhat higher east-bound, but much lower west-bound.

The increase in through freight last year was chiefly in west-bound, and that was enormous—54 per cent. The low rates had to work against light crops for east-bound ship-

ments, and the increase was but 7 per cent. In local freight there was very little increase.

The through freight was no less than 77 per cent. of the total, against 74 per cent. in 1880. The increase in passenger traffic was not so great as on many roads, only 3.2 per cent., but in through passenger traffic there was an increase of nearly 12 per cent., the local traffic having decreased 3½ per cent., which was an exceptional case in 1881, we think. The decrease in the through passenger rate was less than might have been expected—from 1.818 to 1.769 cents per mile, and there was a considerable increase in the local passenger rate, so that the smaller local traffic produced larger earnings. The local is 52½ per cent. of the total passenger traffic. With the rates of 1880 the traffic of 1881 would have yielded \$580,000 more profit than was actually realized—an addition of 70 per cent. to the net earnings, and nearly 4 per cent. on the company's stock.

Mr. Devereux's report gives a very interesting statement of the earnings of the road through the different freight lines running over it. From this it appears that nearly 70 per cent. of its through earnings were through these lines, and that those running over the New York Central brought it more than four times as much as the Erie lines.

The report also recalls the fact, particularly interesting just now, that in the vote for consolidation of the Cincinnati, Hamilton & Dayton with this road, 28,284 shares of the Cincinnati company voted in favor and only 536 against the plan.

The future of this road largely depends upon the maintenance of through rates, for which the prospect is good. Not much improvement can be hoped for in the first half of this year, but with good harvests there seems no reason why the last half should not be eminently profitable.

IMMIGRATION is now extraordinary, and is having a material immediate effect on the business of certain railroads and communities, aside from the permanent effect which will follow so large an addition to the productive force of the country. During March the Bureau of Statistics reports the arrivals to have been 65,284, against 28,247 in February and 44,056 in March of last year. Last March no less than 10,797 of these immigrants were credited to Canada, but this doubtless includes the European immigrants forwarded by the Grand Trunk Railway, which is a very large number. And the figures are probably considerably in excess of the immigration to the United States, as those destined to Manitoba cannot well be separated from those destined to our Western states, and the immigration into Manitoba is the great feature of the year. It seems to have taken the place that Kansas once held, and is receiving more immigrants than any one section of the United States, nearly all coming from Canada and England. This immigration perhaps makes more impression than any other, even of similar amount, because those going to Manitoba come generally in whole ship-loads and train-loads, whereas the immigration to our states is more scattered and individual.

It must not be supposed, however, that because the movement to Manitoba is phenomenally large, that to our Western states and territories is small or moderate. It is doubtless larger than ever before, and especially to Western Minnesota and Dakota, where there are still cheap and fertile lands. But the people going to Dakota settle on eight or ten different railroad lines or branches, and arrive by half a dozen, and they nowhere make the mighty current which flows over the St. Paul, Minneapolis & Manitoba, now the only route by which the immigrant can reach Manitoba.

There is reason to believe, too, that this year's immigration will be engaged in agricultural production much more than last year's, when the great expansion of manufacturing, building and railroad construction absorbed, we might say, the whole of it—that is, it required an addition to the working force probably equal to more than twice the whole immigration, and though it was mainly supplied by the older and native population, it all the same prevented such an extension of farming as would otherwise have occurred. There has been a decided check to this expansion, and this will leave more of the increase of population, by immigration or otherwise, free to open new farms and cultivate old ones, greatly to the advantage of those railroad companies that have built new lines on the border, whose earnings depend almost wholly on the settlement of the country; and greatly to the advantage of the country at large, we may add, which has been expanding some of its manufacturing industries too fast for a non-exporting country.

THE NEW YORK-CHICAGO FAST TRAINS are withdrawn, though the Chicago-New York trains continue, as indeed they existed long before the west-bound trains were put on. The roads themselves seemed to be becoming reconciled to these trains (one by the Pennsylvania and one by the New York Central and the Lake Shore), and to have confidence that they could be supported, when they were withdrawn. They were limited trains on which an extra price was charged. After the advance in passenger rates it became a question whether the New York Central under its charter could charge the extra price which its *pro rata* of the Chicago rate would give it, and, though it will, under the new passenger contract, get as much of any additional earnings on the Pennsylvania as if they were made on its own road, its officers make it a point of honor to have as fast trains as any other line.

The Pennsylvania fast train from Chicago continues a limited train, with an extra charge, as heretofore; the east-bound fast trains by the other roads have never been limited trains. They do not leave at the same hour, or make quite so fast time as the Pennsylvania train.

It seems altogether probable that one very fast train

between New York and Chicago charging an extra fare would be supported; but evidently one might be when two would not be, and each line seems to be so anxious to make as good an appearance as its neighbors that we cannot have one unless we have two, with a probability of one or two more soon after.

CHICAGO RAIL SHIPMENTS EASTWARD for the week ending April 8 were 38,988 tons this year, against 32,447 tons the week before, 58,020 in the corresponding week of last year, and 56,429 tons in the corresponding week of 1880. The shipments, in spite of the fact that it was the first week of lake shipments, were not only larger than the week before, but were the largest for four weeks. Before for five weeks there had been a continuous decline in the shipments from week to week. Of these shipments for the week ending April 8 last, the Chicago & Grand Trunk carried 21.8 per cent., the Michigan Central 18.7, the Lake Shore 16.6, the Fort Wayne 28, the Pan Handle 7.2 and the Baltimore & Ohio 7.7 per cent. This is the fifth week that the Chicago & Grand Trunk has had an unusually large proportion of the whole. The two Vanderbilt roads have 35.3 per cent. of the whole, against 49 in the old pool; the two Pennsylvania roads 35.2 per cent. of the whole, against 33 in the pool. It is noticeable that since the transfer of the Erie's freight lines from the Vanderbilt roads to the Fort Wayne, the latter road has increased its percentage greatly, but that the Pan-handle, which also had an Erie freight line, has a considerably smaller percentage than before.

For the week ending April 15, the report giving only the shipments billed from Chicago shows these shipments to have been 28,859 tons, against 28,172 the previous week, and 60,868 in the corresponding week of last year. This year 5,382 tons were flour and 17,475 grain; last year 11,205 tons were flour and 42,182 grain. The Grand Trunk is credited with 21.5 per cent. of the total shipments, and with 25 per cent. of the grain; the Fort Wayne with 28.8 per cent. of the whole, and with 30.7 per cent. of the grain; the two Vanderbilt roads, with 38 per cent. of the flour and 27.3 per cent. of the grain—much less than usual.

Under the circumstances, the shipments are satisfactory, and there is good reason to believe that full rates are received on it. These are low, but they leave a small margin of profit.

THE NEW YORK RAILROAD COMMISSION BILL passed in the lower house of the New York Assembly last Wednesday, after having been amended so as to provide that the commissioners shall be elected by the people—a provision which makes it extremely improbable that it will ever be of any use, except to provide places for politicians with "claims" on the parties; candidates for other offices will be able to trade off their votes and influence for a nomination for this office. There probably never was any body less fitted to select experts for special and little understood work than a political convention. The commission can be made to serve it as a sort of party headquarters, by filling it with the "bosses" who run the machine, and who, in such a place, where they must largely choose their own work, can give their whole mind to the machine.

NEW PUBLICATIONS.

Engineers' and Mechanics' Pocket-Book. Forty-first Edition, Revised and Enlarged. By Chas. H. Haswell, Civil, Marine and Mechanical Engineer. (New York: Harper & Brothers, 1882.)

The generation of American engineers who have reached middle life, or as Oliver Wendell Holmes expresses it, those who have ascended to the snow line, will not need to be told of this book, one of the earlier editions of which has probably been their companion for many years past. Side by side with the new edition we have a copy of the eighth, published in 1855, which was bought in the early days of the apprenticeship of the writer and which has been his friend and counsellor ever since. Much wear has given to it the familiarity of an old acquaintance. It opens of itself at the tables of areas and circumferences and the weights of "Miscellaneous." It is true that it is almost impossible to find anything in it unless the engineer knows where to look for it, owing to the absence of an alphabetical index, but in the days when the old book was bought and used there was more time in twenty-four hours than there is now, and wasting a considerable fraction of that time in looking for anything was not so serious a matter as it has since become. The old edition has 313 pages; the new one has 674 and besides has 46 duplicated pages, making 720 in all.

Most of the new matter is introduced on duplicate pages marked with one or more "stars" (*). This is rather an awkward expedient, but as these follow the other pages consecutively, it causes little inconvenience in referring to them.

It will, of course, be impossible in a notice of this kind to enumerate even the titles of the new matter. But some things which have been added appear to be of rather doubtful utility in a book of this kind. Thus we have 8½ pages giving the records of remarkable feats of men in walking, running, jumping, leaping, lifting, throwing weights, fly-rod casting, swimming, skating, snow-shoeing, etc., and of the speed and endurance of horses, pigeon-flying, coursing and chasing.

On pages 618*—620 a list of the distances sailed by various side-wheel and screw steamers, sailing vessels and in boats, and of the time of each voyage is given. On page 620** there are similar records of "rifle, pigeon, trap, and bird shooting," and finally of "rat-killing," and the reader is gravely informed that "—Philadelphia, Penn., 25 rats in 1 min. 28 sec." That kind of knowledge is certainly not

"civil" engineering, neither is it mechanical nor marine, although it might perhaps be classed as sanitary engineering.

While it is thought that some few items of this kind might have been excluded to the advantage of the book and without any loss to its readers, yet the new volume is so very great an improvement over the old and familiar friend of 1855 that it disposes one to forsake the former.

The steam tables on page 575* and 576 are a new feature, and a very desirable one, in this edition. So are the rules for the expansion of steam, work done, etc., and the table of hyperbolic logarithms and rules for slide-valves on pages 577*-585. Very elaborate tables are given, too, of the performance of steam pumps by different makers. The rules and tables relating to the construction and working of steam boilers have been very much extended, a great deal of new matter being introduced.

The portion relating to the "Operation of Locomotives" was reprinted in our issue of March 24 of this year. Since that time attention has been called to the fact that the formula given for the tractive power of "each cylinder" should be for *both cylinders*, and that in its present form it gives twice as much as the actual tractive power of a locomotive. This is undoubtedly the case. Another error has crept into the table of coefficients of adhesion of locomotives; one "in frost and snow" is given at 0.09, it should be 0.009.

The additions to this book lead us to inquire as to what will ultimately be the limits of such compilations. There are now two tendencies at work, one to condense by means of algebraic formulas and other means the greatest amount of information into the smallest possible space, the other is an enormous and rapid growth of data of various kinds relating to engineering subjects. It is becoming impossible to compress such information into any reasonable limits, and a thorough research into any one branch of engineering is, on account of the continued growth and accumulation of literature, becoming quite impracticable to any one who cannot give all his time to such work.

The rapid advances which are being made in engineering art and science are very strikingly indicated, too, by glancing over the pages of the new edition of Mr. Haswell's book, and comparing it with one of the earlier copies. New experiments, investigations and records are constantly being carried on, and it seems as though some co-operative effort must soon be made to collect, classify and record the knowledge which is being poured out before us, and which on account of its quantity is losing part of its usefulness. Mr. Haswell has done a good work in collecting much of the latest information relating to engineering subjects, and adding it to his book. For the reasons stated, the work of the compiler, the condenser and the index-maker is becoming every day more essential, and probably in the near future "boiling down" will become a distinct profession.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Chicago, Milwaukee & St. Paul. annual meeting, at the office in Milwaukee, Wis., June 5, at noon. Transfer books close May 18.

Lake Shore & Michigan Southern. annual meeting, at the office in Cleveland, O., May 3, at 10 a. m.

Chicago & Northwestern. annual meeting, at the office in Chicago, June 1. Transfer books close April 29.

Indiana, Bloomington & Western. annual meeting, at the office in Indianapolis, Ind., May 9, at noon.

Railroad Conventions.

The *Railway Car Accountants' Association* will hold its annual meeting in Boston, beginning on Tuesday, May 23, at 10 a. m. The Hotel Vendome has been selected as headquarters for members.

The *General Time Convention*, which was to have been held April 12, has been postponed by general consent, and will be held in Cleveland, O., on call of the Chairman.

The *Western Association of General Passengers and Ticket Agents* will hold its next meeting in Chicago, May 10.

Dividends.

Dividends have been declared as follows:

Georgia, 2½ per cent, quarterly, payable July 15.

Oregon Railway & Navigation Co., 2 per cent, quarterly, payable May 1. Transfer books close April 20.

Meeting of Trunk Lines and Connecting Roads.

The meeting at Mr. Fink's office beginning on Wednesday of last week, which we noticed in our last issue, was continued throughout the week, and a few of the representatives remained to negotiate Monday of this week. The net result was an agreement to divide the net live stock traffic among the connections of the trunk lines, while the trunk line contract was completed and signed by all parties concerned, and rates were advanced accordingly last Monday. There were also conferences concerning the division of freight at the Western pooling points. The first step in this is for the roads interested to see if they can agree, if not they submit their claims to Mr. Fink, who will make a division after having heard the arguments; from this decision any company may appeal to the Board of Arbitrators, who are yet to be appointed. The St. Louis roads agree, as heretofore, to divide their traffic equally; the Chicago roads and some others, we believe, submitted arguments to Mr. Fink. Greater earnestness has never been shown at a meeting of this kind, and there is every prospect of a successful execution of the plans agreed to.

Association of American Railway Superintendents.

This Association met at the rooms of the Railway Club, No. 46 Bond street, New York, on Wednesday, April 19, at 10 o'clock. The meeting adjourned soon after being called to order, to make room for the Southern Time Convention, and met again at 1 o'clock. There were about 25 members present, among whom were Messrs. Peyton Randolph, of the Richmond & Danville Railroad, President of the Association; E. T. D. Meyers, Richmond, Fredericksburg & Potowmac; Waterman Stone, Providence, Warren & Bristol; J. B. Gardiner, New York, Providence & Boston; C. D. Hammond, Albany & Susquehanna; J. F. Devine, Wilmington & Weldon; D. W. Sauborn, Eastern; R. M. Sulley, Peters-

burg; J. M. Fry, Columbia & Greenville; R. G. Fleming, Port Royal & Augusta; Wm. H. Green, Piedmont Air Line; E. G. Ghio, Seabird & Roanoke; W. M. S. Dunn, Virginia Midland; G. R. Talcott, Charlotte, Columbia & Augusta, and P. S. O'Rourke, Grand Rapids & Indiana.

After transacting the ordinary routine business the report of the Committee on Signals was called for. A verbal report was made and the subject discussed at considerable length.

The circular of the Committee of the Master Car-Builders' Association on the reorganization of that body was presented for consideration, and the following resolution was adopted:

"Resolved, That it is the sense of this meeting that the proposed change in the constitution of the Master Car-Builders' Association is eminently desirable and worthy of the hearty approval of this Association."

Owing to the lateness of the session we are unable to give a fuller report of its proceedings.

Southern Time Convention.

The Southern Time Convention met at the National Railway Club rooms, No. 46 Bond street, New York, April 19, with a full attendance. Mr. R. R. Bridgers presided. It was decided to continue the old summer time schedule in force for the coming season.

American Society of Mechanical Engineers.

The annual meeting of this Society began at the Franklin Institute rooms in Philadelphia, April 19. The President, Professor R. H. Thurston, occupied the chair and made a brief opening address. Mr. W. R. Eckart, of San Francisco, engineer of mines in the Comstock lode, read a paper on "The Chronograph for Engineering Purposes, with the Hipp Escapement." A discussion followed, after which Prof. Thurston read a paper on "The Several Efficiencies of the Steam Engine."

The evening session was the memorial session in remembrance of the late Alexander L. Holley. An oration was delivered by James C. Bayles, after which speeches were made by Professor Thurston, Coleman Sellers, of Philadelphia; Eckley B. Cox, of Luzerne County, Pa.; J. C. Hoadley, of Boston; R. W. Hunt, of Troy; William Metcalf, of Pittsburgh; Charles T. Porter, of Philadelphia; J. T. Holloway, of Cleveland; L. B. Moore and W. E. Partidge, of New York City.

ELECTIONS AND APPOINTMENTS.

Baltimore & Ohio Express Co.—The directors of this newly organized company are: Robert Garrett, Samuel Spencer, Baltimore; Charles A. Beecher, John J. Henderson, George Hoadley, J. L. Keck, W. W. Peabody, Cincinnati. They are all officers of the Baltimore & Ohio or its connecting lines.

Cedar Falls & Minnesota.—At the annual meeting in Dubuque, Ia., April 11, the following directors were chosen: D. Willis James, J. Kennedy Todd, O. H. Northcott. The road is leased to the Illinois Central Company.

Chicago & Alton.—Assistant General Manager C. H. Chappell is appointed Acting General Manager during the absence of General Manager McMullin.

Chicago, Milwaukee & St. Paul.—Mr. A. J. Earling, late Assistant Superintendent of the Chicago & Pacific Division, has been appointed Superintendent of the new Omaha line.

Chicago & West Michigan.—The following are now the officers of this road: C. C. Harris, Chief Engineer and General Superintendent; F. L. Peck, General Road-Master and Bridge Master; L. Hitchcock, Master Mechanic; Robert Caithness, Fuel and Lumber Agent; offices at Muskegon, Mich. Mr. John McCarty has charge of the shops at New Buffalo, Mich., as General Foreman.

Cleveland, Columbus, Cincinnati & Indianapolis.—At the meeting held in Cleveland, O., April 13, the following directors (one-third of the board) were chosen for three years: James H. Rutter, Augustus Schell, Amos Townsend, Cornelius Vanderbilt, Wm. H. Vanderbilt. Mr. Townsend is re-elected; the others succeed Walter Ferguson, H. B. Hurlbut, Hugh J. Jewett and James R. Keene. The new directors represent the Vanderbilt interest, which now controls the company.

Coudersport & Port Allegany.—The directors of this new company are: F. N. Arnold, A. M. Benton, Port Allegany, Pa.; B. D. Haulin, Smethport, Pa.; Isaac Benson, F. W. Knox, A. G. Olmstead, Coudersport, Pa.; C. V. Barse, C. S. Curry, Olean, N. Y.; F. H. Root, Buffalo, N. Y.

Kansas & Missouri.—The directors of this new company are: C. W. Blair, Ft. Scott, Kan.; Ira Harris, Rosedale, Kan.; O. E. Learned, Lawrence, Kan.; W. J. Ferry, J. S. Ford, George H. Nettleton, Wallace Platt, Kansas City.

Mississippi Valley.—The officers of this company are: President, Hiram R. Steele; Vice-President, Rufus Learned; Secretary, John R. Wile; Treasurer, Henry Frank.

Orange Ridge.—The officers of this company are as follows: President, N. R. Gruelle; Vice-President, T. A. Garrison; Secretary and Treasurer, T. E. Wilson; Chief Engineer, J. A. Macdonald. Office at Sanford, Florida.

Pennsylvania Company.—The Pittsburgh Telegraph reports that First Vice-President J. N. McCollough is to be made General Manager also of all this Company's lines and of the Pittsburgh, Cincinnati & St. Louis.

Mr. D. M. Peppard has been appointed Master Mechanic in charge of the Crestline shops on the Pittsburgh, Ft. Wayne & Chicago, in place of G. W. Lowe, resigned.

Pensacola & Atlantic.—At the annual meeting in Pensacola, April 12, the following directors were chosen: W. D. Chipley, W. F. McCormick, G. A. Stanley, Pensacola, Fla.; F. de Funik, J. E. Green, Louisville, Ky. The board elected F. de Funik President; W. D. Chipley, Vice-President and General Superintendent; Cushman Quarrier, Secretary and Treasurer. Capt. A. W. Gloster will continue Chief Engineer and R. M. Cary, Jr., Cashier and Paymaster. The road is controlled by the Louisville & Nashville.

Portage, Westbourne & Northwestern.—At the annual meeting in Winnipeg, April 9, the following directors were chosen: J. S. Aikens, A. G. B. Bannatyne, C. P. Brown, L. Couchon, W. N. Kennedy, E. P. Laycock, Duncan McArthur, G. McMicken, John Norquay, A. W. Ross, G. B. Spencer, A. G. Walker, Winnipeg, Manitoba; Donald McInnes, W. E. Sanford, Hamilton, Ont.; Charles Magee, Ottawa. The board elected Duncan McArthur President; C. P. Brown, Managing Director; E. P. Laycock, Secretary and Treasurer.

St. Paul & Duluth.—Mr. E. F. Dodge is appointed General Freight and Passenger Agent in place of A. M. Eddy, resigned. Mr. Dodge was recently on the Chicago, Milwaukee & St. Paul road.

Mr. Frank W. Davis has been appointed Auditor in place of T. S. Ilsey, resigned. Mr. Davis has been in the office under Mr. Ilsey for several years.

South Carolina.—Mr. John B. Peck, for several years past General Superintendent of this road, has been chosen General Manager.

Texas Western.—In Houston, Texas, April 12, the following officers were chosen: President, Frederick D. Grant; Vice-President, S. K. McIlhiney; Secretary, J. G. Tracy; Treasurer, Jesse R. Grant.

Vicksburg, Shreveport & Pacific.—Capt. T. Y. Dabney, of Shreveport, La., has been appointed Chief Assistant Engineer in charge of construction.

PERSONAL.

—Mr. T. S. Ilsey has resigned his position as Auditor of the St. Paul & Duluth Railroad Company.

—Mr. O. M. Shepard has resigned his position as Superintendent of Transportation of the New York & New England Railroad.

—Mr. J. M. Edwards has resigned his position as Superintendent of the Macon & Brunswick Division of the East Tennessee, Georgia & Georgia lines.

—Mr. John Dunn, for many years in the employ of the Illinois Central Company, and for some time past Assistant Secretary, has been appointed Vice-Consul for Great Britain in Chicago.

—Mr. G. W. Lowe, Master Mechanic in charge of the Crestline shops on the Pittsburgh, Ft. Wayne & Chicago road, has resigned to accept a position on the Chicago & Northwestern.

—A Milwaukee dispatch reports that Mr. J. T. Clark, General Superintendent of the Union Division of the Union Pacific Railroad, has resigned to accept an important position on the Chicago, Milwaukee and St. Paul road.

—Mr. J. C. McMullin, General Manager of the Chicago & Alton road, has received leave of absence for several months on account of ill health. His health has been impaired for some time past, and he desires rest and freedom from all care for some time.

—Mr. T. J. Janney, Auditor of the Columbus, Hocking Valley & Toledo Company, has resigned, to take effect April 30. He will take an active interest in a new manufacturing enterprise. Mr. Janney has been with the company from the first organization of the Columbus & Hocking Valley Company, and is thoroughly versed in accounts.

—Mr. Michael Shanly, an extensive contractor, died at his home in Newark, N. J., April 17, aged 68 years. Mr. Shanly was entirely a self-made man, and had built up a large business as a contractor on railroads and city improvements. At the time of his death he was engaged in the work of building the new cut through Bergen Hill on the Pennsylvania Railroad, and in ballasting the New York Division with stone ballast.

—M. Henri Giffard, a well-known French mechanical engineer, died in Paris, April 16, aged 59 years. He was early in life placed on a French railroad, and made a number of improvements in locomotives, chief among which was the injector for pumping water, which, in its original form or modified by later inventors, is now so generally used. In later years M. Giffard gave a great deal of attention to the question of aerial navigation, on which he spent much time and money.

—Col. Thomas R. Sharp, who was for a number of years Master of Transportation of the Baltimore & Ohio Railroad, and more recently President and Receiver of the Long Island Railroad, has opened an office at No. 115 Broadway, New York, as consulting and inspecting engineer. He will give especial attention to the examination of railroad properties and accounts, to reports on the condition and prospects of railroad lines, and will also supervise the construction and location of new roads and the purchase of materials, supplies and equipment. Col. Sharp is well and widely known, and can give his clients the benefit of a long and varied experience in railroad affairs.

—Mr. George W. Gill, a wealthy and prominent resident of Worcester, Mass., died suddenly in his office in that city April 13, aged 63 years. He was a blacksmith by trade, and many years ago was a workman and afterwards foreman in Bradley & Rice's car shops. He afterwards entered the Washburn Iron Works, and at the time of his death was a large stockholder and General Agent of the company. Mr. Gill was largely interested in railroad property, and served as a director of the Norwich & Worcester, the Central Vermont and some other companies. He was also a large stockholder in the Eastern and the Fitchburg companies. Mr. Gill took a prominent part in the management of the Democratic party in Massachusetts, but never held any public office, excepting two years' service in the General Court as a member from Worcester.

—Hon. Thomas Jones Yorke, who died at his home in Salem, N. J., April 4, aged 82 years, was almost the last survivor of an earlier generation of railroad men. Over 50 years ago he was connected with the construction of the Delaware & Raritan Canal, and afterwards for many years with the Camden & Amboy Railroad Company, and was at one time its Acting Treasurer. He was largely instrumental in securing the construction of the West Jersey road, and was a director of that company from its organization in 1853 until his death. He was also Secretary and Treasurer of the company from its organization until the death of Commodore Stockton in 1866, when he was chosen President and retained that office until 1875, when he retired on account of his advanced age. Mr. Yorke was highly esteemed by his friends and neighbors and had held several public offices; he was for many years lay judge of the Court of Common Pleas, and was elected to Congress in 1836 and again in 1838.

TRAFFIC AND EARNINGS.

Grain Movement.

For the week ending April 8, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets, and receipts at the seven Atlantic ports, have been, in bushels, for the past six years:

	Northwestern shipments.		Atlantic	
	receipts.	Total.	By rail.	P. c. by rail.
1877	1,953,962	1,778,463	.....	2,440,109
1878	3,997,045	3,174,725	926,530	3,937,425
1879	2,566,290	3,076,437	.....	4,629,678
1880	3,486,821	7,730,317	1,678,205	21,8
1881	3,643,139	2,727,023	2,358,221	5,371,029
1882	2,394,348	2,911,494	1,394,953	47,9

The receipts of the Northwestern markets this year, though smaller than in the corresponding week of any previous year since 1877, are a little larger than the week before this year, and are the largest for seven weeks. The shipments of these markets were a little larger than in the corresponding week of last year, but smaller than in any corresponding

week when navigation was open. The contrast between this first week of open lake navigation this year and in 1880 is very striking: then the water shipments were 6,052,022 bushels; this year, 1,518,542 bushels; yet this year the number of vessels wintering in Chicago harbor, and therefore ready to take cargoes before navigation opened and to sail as soon as it opened, was larger than ever before. The rail shipments, it will be noticed, were not so very much less this year than last. Of the water shipments this year 29,564 bushels were by the Mississippi, against 368,802 bushels last year. The Atlantic receipts are the smallest we have ever recorded, and are 70 per cent. less than last year, and 82 per cent. less than in 1880.

Of the Northwestern receipts Chicago had 31 per cent. St. Louis 20.9, Peoria 20.1, Toledo 10.4, Detroit 7.5, Milwaukee 7.3, Cleveland 2.1, and Duluth 0.7 per cent. Compared with the previous week, when the aggregate receipts were nearly the same (53,000 bushels less), there is a large gain at Chicago and a large loss at Milwaukee (where the receipts are the smallest for a year), large gains at Toledo and Detroit; losses at St. Louis and Peoria.

Of the Atlantic receipts New York had 42.9 per cent. Boston 13.6, Philadelphia 12.8, Baltimore 12.3, New Orleans 12.3, Portland 3.5, and Montreal 2.6 per cent. Boston's receipts are the smallest since June, 1879. New York had smaller receipts the week before, but in no other since 1873.

In this week ending April 8, 1,017,210 bushels of grain were exported from these Atlantic ports, 59.7 per cent. of it going from New York, 18.7 from Baltimore, 10.3 from Boston, 8 from New Orleans, 3.2 from Portland, and 0.1 from Philadelphia.

For the week ending April 12, 880,262 bushels of grain and 50,047 barrels of flour were exported from these Atlantic ports this year, against 4,099,384 bushels of grain and 88,524 barrels of flour in the corresponding week of last year.

For the week ending April 15 receipts and shipments at Chicago and Milwaukee were:

	Receipts.	Shipments.	
	1882.	1881.	1882.
Chicago.....	851,925	1,093,504	2,076,862
Milwaukee.....	156,205	195,380	145,615
Both.....	1,008,130	1,198,977	2,222,477

The receipts this year were 16 per cent. less, but the shipments were 35% per cent. more than last year, when there were no lake shipments.

For the same week ending April 15 receipts at four Eastern ports have been, for three successive years:

	Bushels.	Boston.	Phila.	Baltimore.	Total.
1882.....	852,549	155,650	175,970	1,155,554	3,145,723
1881.....	1,307,118	507,645	310,350	596,057	2,782,070
1880.....	1,219,246	536,700	953,100	1,446,460	4,155,506
P. c. of total.					
1882.....	63.3	11.6	13.1	12.0	100.0
1881.....	49.1	18.2	11.2	21.5	100.0
1880.....	29.4	12.9	22.9	34.8	100.0

The total receipts are this year about one-third those of 1880 and one-half those of 1881. Philadelphia and Baltimore together had 25.1 per cent. of these this year, against 32.7 last year and 57.7 in 1880.

Railroad Earnings.

Earnings for various periods are reported as follows:

	Three months ending March 31:			P. c.
Ala. & Southern.....	\$106,192	\$184,554	I.	\$11,638 6.3
Buff. Pitts. & West.....	181,754	142,576	I.	39,178 27.4
Net earnings.....	99,514	33,547	I.	63,067 216.0
Cairo & St. Louis.....	88,524	106,324	I.	17,800 16.8
Central Iowa.....	257,763	150,285	I.	107,475 71.6
Cin. N. O. & Tex. P.....	579,288	453,533	I.	125,755 27.7
Cleve. Ark. & Col. P.....	109,161	97,483	I.	11,073 12.0
Flint & Pere Marq. P.....	525,146	414,850	I.	110,298 26.6
Hann. & St. Joseph.....	449,116	453,631	D.	4,515 1.0
Houston, E. & W. Tex. P.....	51,701	27,786	I.	24,005 86.3
Kan. City, Ft. Scott & G. P.....	406,003	322,228	I.	83,865 26.0
Tol. Cin. & St. L. P.....	215,852	134,164	I.	81,688 60.9
Wisconsin Central.....	459,116	278,259	I.	180,856 65.0

Two months ending Feb. 28:

	\$43,365	\$40,255	I.	\$3,110 7.8
Bost. & N. Y. Air Line.....	478,453	292,250	I.	186,194 63.7
Bur. Cedar Rap. & No. P.....	190,420	54,182	I.	136,238 252.3
Net earnings.....	1,381,413	918,883	I.	462,930 50.4
Eur. & No. American.....	71,673	62,326	I.	9,347 14.8
Net earnings.....	36,519	11,409	I.	25,140 220.5

Month of January:

	\$210,455	\$162,540	I.	\$47,915 29.8
Ches. & Ohio.....	49,334	14,897	I.	34,457 231.3
Vicksburg, Shreve. & P. P.....	12,106	12,088	I.	78 0.6
Month of February:				
Bost. & N. Y. Air L. P.....	\$20,342	\$19,817	I.	\$525 2.6
Net earnings.....	11,207	4,413	I.	6,704 154.4
Chi. Bur. & Quincy.....	1,034,821	1,422,470	D.	382,649 40.8
Net earnings.....	61,908	322,824	I.	280,174 88.1
Eur. & No. Am. P.....	35,531	30,927	I.	4,624 14.9
St. Johns & Lake Ch. P.....	15,874	11,635	I.	4,219 36.4
Va. Midland.....	86,718	77,534	I.	9,184 11.5
Vicksburg & Meridian.....	43,012	47,696	D.	4,684 9.8
West Jersey.....	52,915	46,545	I.	6,370 13.7
Month of March:				
Ala. & Southern.....	\$68,885	\$62,499	I.	\$6,386 10.2
Buff. Pitts. & West.....	61,544	51,863	I.	9,681 18.4
Net earnings.....	33,801	17,895	I.	15,906 88.7
Cairo & St. L. P.....	32,376	41,036	D.	8,660 21.1
Cin. N. O. & Tex. P.....	199,567	187,402	I.	12,165 6.5
Cleve. Ark. & Col. P.....	44,140	35,418	I.	8,722 24.8
Flint & Pere M. P.....	195,888	159,588	I.	36,300 22.7
Han. & St. Jo. P.....	168,798	176,356	I.	7,558 4.3
Houston, E. & W. Tex. P.....	18,215	12,180	I.	6,035 49.9
Ken. C. Ft. Scott & G. P.....	146,000	123,000	I.	23,000 18.7
Tol. Cin. & St. L. P.....	71,733	48,586	I.	23,150 47.6
Wisconsin Central.....	169,755	104,371	I.	65,384 62.9
First week in March:				
Chi. & Eastern III. P.....	\$34,889	\$33,518	I.	\$1,371 4.1
Chi. & Grand Trunk.....	52,287	26,988	I.	25,299 93.2
Chi. & Northwest.....	382,859	342,183	I.	40,676 11.9
Col. H. V. & Toledo.....	61,370	51,018	I.	10,352 20.3
Great Western.....	96,340	111,738	D.	15,398 13.7
Rochester & Pitts. P.....	6,313	4,256	I.	2,057 47.6
Second week in March:				
Denver & R. G. P.....	\$127,324	\$95,580	I.	\$31,744 33.2
Northern Pacific.....	93,000	48,820	I.	44,180 50.5
St. L. & San Fran.....	51,900	62,300	D.	10,400 16.7

Coal Movement.

Coal tonnages for the week ending April 8 are reported as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Anthracite.....	396,118	381,779	I.	14,339 3.7
Sem-bituminous.....	73,972	103,692	D.	29,720 26.1
Bituminous, Penna.....	55,244	43,743	I.	11,501 26.1
Coke, Penna.....	54,729	60,721	D.	5,992 9.8

Anthracite trade is reported very dull, but with less cutting below circular prices than for some time past. The dullness is likely to continue as the domestic demand slackens with the approach of warm weather.

The Cumberland miners' strike continues, and production

in that region is stopped, although a few thousand tons were shipped last week. Clearfield tonnage keeps up fairly.

The coal tonnage of the Pennsylvania Railroad for the week ending April 8 was: Coal, 139,562; coke, 54,729; total, 194,291 tons. The total tonnage for the year to April 8 was 2,943,544 tons. The tonnage for the week was light, being smaller than that of any preceding week this year.

The Official Accountant's statement of anthracite coal tonnage for March and the three months ending March 31 is as follows, differing somewhat in form from the weekly statements:

	March.	Three months.	
1882.	1881.	1882.	
Phila. & Reading.....	491,933	495,835	1,284,587
Lehigh Valley.....	445,326	442,059	1,142,295
Central of N. J.	313,372	337,754	806,860
Del. Lacka. & Western.....	348,285	362,900	900,741
Del. & Hudson Canal Co.	253,416	291,600	663,156
Pennsylvania R. R. Co.	144,494	143,498	446,517
Pennsylvania Coal Co.	97,284	100,444	240,300
N.Y., Lake Erie & Western.....	13,933	42,752	46,418
Total.....	2,108,043	2,225,842	5,530,913

Total 2,108,043 2,225,842 5,530,913 6,016,681

Decrease for the month, 117,799 tons, or 5.8 per cent. for the three months, 485,748 tons, or 8.1 per cent. For the month only the Lehigh Valley and the Pennsylvania Railroad Co. show increase, and they are very small; for the three months, the Pennsylvania alone shows an increase, which is a little over 1 per cent.

The stock of coal on hand at tidewater shipping points March 31 was 666,318 tons, against 546,315 tons Feb. 28, showing an increase of 120,003 tons during the month.

The coal tonnage of the Kansas City, Ft. Scott & Gulf Railroad for the year ending Dec. 31 was: 1881, 284,039; 1880, 240,553; increase, 48,486 tons, or 18.1 per cent. The tonnage in 1881 came from the following sources: Points on main line, 48,909; branches from Ft. Scott, 41,895; branch from Weir City to Cherryvale, 32,101; Rich Hill Branch, 161,334; total, 284,039 tons.

The grain tonnage of the Kansas City, Ft. Scott & Gulf Railroad for the year ending Dec. 31 was: 1881, 284,039; 1880, 240,553; increase, 48,486 tons, or 18.1 per cent. The tonnage in 1881 came from the following sources: Points on main line, 48,909; branches from Ft. Scott, 41,895; branch from Weir City to Cherryvale, 32,101; Rich Hill Branch, 161,334; total, 284,039 tons.

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The coal tonnage of the Kansas City, Ft. Scott &

RAILROAD LAW.

Bonus for Locating a Station.

An interesting case has been decided in the Ford County (Ill.) Circuit Court. It was a suit brought by Snell, Taylor & Co. against W. H. Pells to recover about \$5,000 collected by Pells from people around Pellsville, the third station east of Paxton, as a bonus for locating their station in the year 1872, the time the Lafayette, Bloomington & Muncie Railroad was built, plaintiffs claiming that defendant in collecting the money acted as their agent. The Court held that the contract was immoral, and therefore void in law; that plaintiffs had no right (in locating any station) to be governed by any other influence than the public good; that the contract was contrary to public policy, and the law would not interfere as between parties who thus came into possession of money. The jury found for the defendant, under the instructions of the Court. The case will be appealed to the Appellate Court.

THE SCRAP HEAP.

Locomotive Building.

The Schenectady Locomotive Works at Schenectady, N. Y., have a contract for six engines for the Wisconsin Central road.

Fleming & Sons in St. John, N. B., last week delivered another heavy passenger engine to the Intercolonial road.

H. K. Porter & Co. in Pittsburgh have just completed two locomotives of 3 ft. 6 in. gauge, to go to Japan. They are named "Hirafu" and "Mitsukuni," and are for a new road now nearly completed. The same firm shipped two engines to Japan about a year ago.

The Pittsburgh Locomotive Works continue busy and have still several contracts to be filled.

While there has been no general surrender of the striking moulder at the Paterson locomotive shops, a number of the men have returned to work, and the shops are not at all likely to be delayed by the strike.

Car Notes

The New York, New Haven & Hartford shops in New Haven, Conn., have begun to build 75 new passenger cars for the road. The inside decorations and upholstery will be furnished by Pottier & Stymus, of New York.

The Gilbert Car Works in Buffalo, N. Y., are building 400 coal cars to be used in the bituminous coal trade over the Erie road.

The Ohio Falls Car Works, in Jeffersonville, Ind., have lately, it is reported, secured several large contracts for freight cars, some of them for Eastern roads.

The Pittsburgh & Lake Erie shops in Youngstown, O., are building 300 new coal and coke cars.

The Pittsburgh Car-Wheel & Car Works of J. L. Gill, Jr., have lately been enlarged by a new wood machine shop 100 by 100 ft. They are at work on 50 box cars for the Toledo, Ann Arbor & Grand Trunk; 100 for the Columbus, Hocking Valley & Toledo; 50 for the Standard Oil Co. and 15 for the Isabella Furnace Co.

A company has been organized at Three Rivers, Mich., to build railroad velocipedes under a patent recently obtained by Samuel H. Waltz, of that place.

The Chicago, Burlington & Quincy shops at Aurora, Ill., are building four Horton chair cars, which are to be very handsomely finished.

The machinery for the new car shops of the Chicago, Milwaukee & St. Paul road has been bought, a large part of it in England.

Iron and Manufacturing Notes.

Low Moor Furnace at Low Moor, Va., is in blast, making 100 tons of iron a day.

The Standard Railway Joint Co. has granted to the St. Louis Bolt & Iron Co., of St. Louis, and the Diamond State Iron Co., of Wilmington, Del., the exclusive right to manufacture the patent "standard" rail-joint. This joint has been tried on the New York Central & Hudson River, the New York, Susquehanna & Western and the Manhattan Elevated roads; it is in use on the Indianapolis Union, the Chicago, Rock Island & Pacific, the Oregon Railway & Navigation Co.'s and other roads, and is used entirely on the new Chicago & Atlantic road.

Pine Grove Furnace, the only blast furnace in Texas, is getting ready to go into blast. It is a small charcoal furnace.

The Mt. Hickory Iron Co. has blown out one of its furnaces near Sharpsville, Pa., for repairs.

The Superior Mill of Kloman & Co. in Pittsburgh is running on a large order for street rails.

Dilworth, Porter & Co., manufacturers of railway and boat spikes, are putting in their works a second continuous train of rolls. The present train is used for rolling spike iron, but the new train, which will be about 30 ft. long, will be used for rolling round iron of various sizes, from one-fourth to one inch in diameter. This train will roll as much iron as about five three-high trains, and with something like one-fourth the number of workmen. Continuous rolls were invented by a late member of the firm, Mr. Swett, now deceased, and are used nowhere else in the world.—*Pittsburgh American Manufacturer*.

Victoria Furnace, at Goshen, Va., is nearly finished. It is owned by an English company.

The Gates & Scoville Iron Works in Chicago have built eight stone-breakers for the Atchison, Topeka & Santa Fe road. They are used for breaking up rock for ballast.

The Moran Bolt & Nut Co. in St. Louis has recently put in new machinery, increasing the capacity of the works to 21,000 bolts a day.

The Pittsburgh puddlers have decided to ask for an advance of 50 cents per ton in their wages. A conference between representatives of the puddlers and the manufacturers was to be held this week.

The Rail Market.

The *Iron Age* says of steel rails: "The market is very irregular and prices hard to quote. Some name \$55 to \$57, but there are no buyers at these figures, neither could the parties accept orders, if offered them, for such deliveries as would probably be required. Rumors are current of sales at \$52.50 and from that up to \$55, according to delivery. Lots from second hands unsettle the market, so that buyers are very timid, and not likely to pay over \$55, unless in urgent need of supplies, while a good many profess to be holding off in anticipation of still lower figures. Probably a fair quotation would be \$53 to \$55, although there is no absolute certainty that they could be either bought or sold at these figures. The consequence is that there is a general waiting to see what will develop within the next 30 or 60 days, and until then prices will be almost nominal."

Iron rails are quoted at \$47 to \$51 per ton at mil, according to section, with no sales.

Spikes are in light demand and quoted at \$8 per 100 lbs, but it is reported that some heavy orders have been placed at \$2.85 and \$2.90. Fish-plates are slightly lower, \$2.50 to \$2.60 per 100 lbs; track-boots, \$3.70 to \$4.10.

Old iron rails are dull and nominal at \$28.50 to \$29.50 in Philadelphia, and about the same in New York.

Blast Furnaces of the United States.

The quarterly statement of the *Iron Age* gives the condition of the blast furnaces of the United States on April 1 as follows:

	In blast.	Out of blast.	Not reported.	Total.
Charcoal	132	146	4	282
Anthracite	175	61	..	236
Bituminous or coke	150	74	..	224
Total	457	281	4	742

The total weekly capacity of the 457 furnaces in blast is 104,189 tons; of the 281 out of blast, 44,202 tons.

On April 1, 1881, there were 139 charcoal, 159 anthracite and 155 bituminous furnaces in blast. The number out of blast includes furnaces under repair and rebuilding.

A Big Land-Slide.

A dispatch from Atchison, Kan., April 13, says: "The land-slide on the Burlington & Missouri, a mile and a half above White Cloud, which occurred Tuesday, is one of the most serious in the history of a company having a riper experience with this sort of demonstration than any other railroad in the United States. The slide is fully 600 ft. long, and covers the track from 10 to 15 ft., extending over it a considerable way into the river. Immense forest trees came down with rocks as big as houses. Had a train been passing at the time when the hill let loose, not a splinter or life would have been left. Transfers are being made at the slide, and travel is not seriously interfered with. A passenger who came down last night believes the mass of dirt and rock cannot be cleared away before Sunday. Between Atchison and Rulo the same company is having a great deal of grief by reason of a rise in the river and the late heavy weather. In addition to the slide above mentioned, several pieces of track have caved into the river in the vicinity of Gibraltar Station, which never gave the company a pound of freight or a passenger, and which has cost a mint of money. Gangs and wreckers are now at the front, making every endeavor to clear away the débris and restore travel."

The Automatic Freight Brake.

Gen. John B. Gray, Vice-President and General Agent of the American Brake Co., makes the following report under date of April 1, to G. L. Joy, President of the company:

"Since my last report, during 30 days, we have inspected of the 500 cars now running on the St. Louis & San Francisco Railway, with our brake upon them, as they have come into the yards and depot at St. Louis and at South St. Louis, a total of 390 cars.

"Of that number 57 had been running one month; 51 had been running two months, 167 had been running three months, 88 had been running four months, 13 had been running six months, and 14 had been running thirteen months.

"Of that number 350 were O. K. in every respect, needed no attention, 10 required tightening or connecting up by hand, 29 required new pieces, nuts, bolts, etc., put in yard, and one required to go to repair track for repair of brake.

"Such repairs as were demanded were attributable to faulty applications of the brakes originally or defective iron, and from no fault of the principle or construction of the brake itself. These cars have been running during the time stated all over the West, as far as Denver, Col., and El Paso, N. M., receiving the rough treatment which freight cars receive without care or attention, and returning O. K. in all respects and looking perfectly."

Blocked by Sand.

The train due here from the Dalles at 7.15 Tuesday morning did not reach here until 7 o'clock Wednesday morning. Between Willows and Alkali the train was stopped about 12 o'clock, Monday night, by sand on the track, and in spite of the efforts of a large force of section men, aided by the passengers, the train had to remain where it stuck until after 10 o'clock Tuesday night. In the meantime the load of passengers, which consisted of 26 in the sleeper, a large number in the coaches, about 50 recruits and 150 Chinamen, a total of 300 men, women and children, passed the time as best they could. The peanut boy went back to the Willows, some six miles, and procured some cheese, crackers, etc., which he sold to the hungry passengers; the recruits divided their rations with the citizens and brought water in their canteens from the river some distance away. The railway officials exerted themselves to the utmost to get the train going and to make the passengers comfortable. At last the wind slackened, the track was cleared of sand and the train came on. The wind-storm which filled the railroad cuts with sand, and kept them full in spite of the efforts of many men with shovels, was the hardest and longest continued blow ever recorded in this country.—*Walla Walla (Wash. Ter.) Union*, April 1.

The sand blockade is much harder to deal with than a snow-drift, as the Southern Pacific people have found on their line across the California desert, where, however, they have the advantage of having a road almost without cuttings.

The Bureau of Information.

"This bureau of information was only started a week ago last Thursday and I am nearly off my head already," said an official yesterday in the Pennsylvania Railroad's new station.

As you leave the waiting-room in the station at Broad and Gilbert streets and approach the gate-keepers a little pavilion recently erected may be noticed. In large letters in front is the sign "Bureau of Information." In this pavilion stood Wm. H. Wilson, who made the remarks quoted above and who is the walking cyclopedia, directory and railroad guide in that department. "I suppose you have to answer a great many foolish questions?" said the person addressed.

"Yes sir, I don't believe I have answered a hundred sensible questions since I've been here."

"What was the Bureau of Information established for?" was asked.

"I have no doubt but that it will be of great benefit to travelers and visitors. You see we are supposed to be well posted on the running of trains, the connections and the cost of freight and baggage all over the country. If a man comes here and says he wants to go on a trip out West, I can tell him when to change, what time the trains leave certain places, and how long it will take to go from one place to another. This is the only information office of this kind I know of, but before long, I guess, we will have them in all the principal stations. You see all these directories and time tables. I can tell you anything you wish to know about any road in the country."

"You say you are troubled greatly by silly questions?"

"Troubled! I'm nearly mad. Just stand there for a few minutes, and if you don't get a dose of it I'm a Dutchman."

The reporter did as desired, and in a short time along came a drummer, and, with an air of coolness that astonished the visitor, asked: "I say, young fellow, I want to ask you a question." "Well, sir," said the young railroad directory, "what is it?"

"How do the trains run up around Boston?"

"What do you mean, sir?"

"Can you tell me when those three or four excursions to Niagara Falls take place?"

"I don't know what you mean, sir," said the exasperated intelligence man.

"Oh, go to the ——" said the disgusted traveler, and having secured a time table, off he sauntered to the waiting-room.

The next person seeking information was a burly farmer from York.

"I say, young 'un," said he; "I sent some baggage through from Harrisburg yesterday. It hasn't got here yet. Where is it, eh?"

"Well," said Mr. Wilson, "Indeed I don't know, sir, but you had better see the baggage-maste."

"Is the Belvidere train on time, do you know?" asked an excited young miss.

"When does the one o'clock train from New York arrive?"

The intelligence man was again bewildered.

"What do you mean, madam?" he ventured.

"I want to know when the one o'clock train from New York arrives?"

On being asked if she couldn't put her question a little more clearly the elderly lady strutted off with an air of insulted dignity.

"What track is the Baltimore train coming in on?" asked a lanky Southerner.

"Where can I buy a postal card?" asked another gentleman.

"I lost my umbrella somewhere between here and Washington," said a young man with an aesthetic look about him. "Do you know where I would be likely to find it?"

This last shot was too much for the man of intelligence, and he laughed heartily. It had the effect of driving off the young man, who had evidently come to the conclusion that the concern was a fraud.

OLD AND NEW ROADS.

Atchison, Topeka & Santa Fe.—The Las Vegas Branch is completed and opened for business. It is six miles long, extending from Las Vegas, N. M., to the Las Vegas Hot Springs, which have already attained considerable importance as a health resort.

The Boston *Herald* says: "The Atchison & Topeka Company will soon negotiate a loan upon its new mileage, the bonds being probably placed in the London market. Atchison & Topeka bonds are held so largely in Boston and the East that a foreign outlet would somewhat relieve the home market, and perhaps enhance the value of the securities by making them more scarce."

Atlantic & Pacific Interceanic.—This company has been incorporated in New York to build a railroad from Port Cortez, Honduras, on the Bay of Honduras, to the Bay of Fonseca on the Pacific coast; also to run steamship lines from the terminal ports to ports in Central America and the United States. The corporators are John I. Waterbury, Joseph L. Hance, Charles J. Canda, Henry W. Curtiss, Washington S. Valentine, George W. Smith, Eugene T. Lynch, Conrad Jordan, Nathaniel P. Banks, John J. Kiernan, and John B. Woodward.

Baltimore & Delta.—This road was formally opened on April 17 from the Baltimore terminus to Fowントown, a distance of seven miles, and regular trains are now running. This section includes the most difficult and expensive part of the road. Work is well advanced on the grading from Townsontown north to Delta, Pa., 37 miles.

Baltimore & Ohio.—The roof of the Doe Gully tunnel, 33 miles east of Cumberland, Md., caved in on April 17, injuring 12 laborers of a gang who had been at work widening the tunnel. Traffic was interrupted for nearly a day while the tunnel was cleared out.

The express business over this road, which has been done by the company directly for some time, is to be transferred to a new organization known as the Baltimore & Ohio Express Company, which has been organized in Cincinnati. This action is partly the result of recent legal decisions on the express business.

Boston, Concord & Montreal.—Surveys are being made for a branch from Tilton, N. H., to Franklin Falls. The line follows the Winnipiseogee River, and is about four miles long.

Boston & Maine.—This company is preparing to build a double-track iron bridge over the Cocheeo River at Dover, N. H. The second track is to be extended as far as Exeter, N. H., 51 miles from Boston, this year, and will also be extended two or three miles on the Portland end of the line. The company has refitted its five old parlor cars and built three new ones for the summer travel.

Boston & Maine and the Eastern.—The traffic contract between these companies, which was made in 1877, expires this year, and it is said that negotiations for a new contract have already begun. It is said that, while a new contract will probably be made, its terms will be considerably changed from those of the old contract. The Eastern people claim that the present agreement is not fair to their company.

Burlington, Cedar Rapids & Northern.—It is reported that this company will build an extension of its Pacific Division from Spirit Lake, Ia., to Sioux Falls this season.

Burlington & Northwestern.—Negotiations are reported to be in progress for the sale of this road to the Central Iowa Company, to be used as part of that company's projected east and west line. The road is of 3-ft. gauge and extends from Burlington, Ia., to Washington, 52 miles.

Central, of New Jersey.—The Chancellor of New Jersey on April 14 granted an order so far relaxing the injunction against the company as to permit the directors to call a meeting of the stockholders for the election of a new board of directors. The order was granted on application of Edward C. Knight, of Philadelphia, and does not name any time for an election. It is not mandatory, but only permits the directors to make the necessary call. No election has been held since the beginning of the receivership, the injunction then granted prohibiting the company from the exercise of its corporate powers.

The report of Receiver Little to the Chancellor has been looked for with much interest, as it was generally supposed that it would contain some statement of the company's financial position and the amount of the floating debt. It was finally filed on April 14, but contains simply the Receiver's recommendations and gives no definite statements. It is as follows, addressed to the Chancellor:

"I, Henry S. Little, Receiver for the creditors and stockholders of the Central Railroad Company of New Jersey, respectfully report that I have made the inquiry which by the order of the Court dated March 6, 1882, I was directed to make in reference to the report of the late Receiver as to the solvency of the company, which report was contained in his answer to the petition of the company for an order requiring the delivery to them of the property and assets held by him, and that I am unable, for the reasons hereafter given, to make a definite report on the subject. The assets are very numerous and of various characters. Those applicable to the payment of the unfunded debt consist, speaking generally, of three or four classes—one immediately

available for the purpose without disadvantage to the company or its business; another consists of assets which, though immediately available for the purpose, it would be disadvantageous in some degree, at least to the interest or business of the company in connection with which they have been obtained, to dispose of now, and another consists of assets, the value of which depends on different considerations, such as the market value of the property pledged for their payment. Some of them are very large interests in coal lands. To force these assets to sale now obviously would be, to say the least of it, extremely injudicious. There are considerable assets whose essential and main value is in the business which they either control or secure. Reference is now made to branch roads built to attract and secure important and lucrative business for the main line, in which point of view they are very desirable investments. There are also other real estate assets than those above mentioned (for instance property of the American Dock Company, the stock of which company is owned by the Central Railroad Company), which are exceedingly valuable, especially for terminal and other like purposes, by reason of their location and character. The availability of these for the payment of the unfunded debt depends on the opportunity for advantageous sale. It would manifestly be in the highest degree unwise to press them upon the market. While I have refrained from expressing an opinion as to the value of the property and assets of the company for the reasons given, yet I see no reason to doubt that if they are properly managed and administered, the company in brief period could pass out of the control of the Court.

"Respectfully submitted this 14th day of April, 1882."

Chicago, Milwaukee & St. Paul.—A Chicago dispatch of April 19 says: "General Manager Morrill, of the Chicago, Milwaukee & St. Paul Railroad, says no new branches or extensions to his line will be projected this year, but work begun last season will be pushed to a speedy completion. The lines on which work is now proceeding and which will be finished this year are as follows: The new Council Bluffs Extension, from Marion, O., to Council Bluffs, will be completed and ready for trains by Sept. 1 next; the line from Hastings to Stillwater, Minn., which will be completed by July 1; a branch line from Yankton to Scotland, Dak., 28 miles in length; the grading for this line has all been done, and it will be ready for business by next fall. The Black Hills Extension has been indefinitely postponed, as the line would not pay so long as the Indians hold possession of the country traversed. This accords with the views of President Keep, of the Northwestern road."

Chicago & Northwestern.—President Keep is reported as saying that this company has no intention whatever of building an extension to Denver or into Colorado.

Chicago, Pekin & Southwestern.—Mr. S. B. Reed, the late Receiver, has filed the following statement for the period from Jan. 1 to April 8, the date of his resignation:

Balance, Jan. 1.....	\$9,471		
Receipts, January.....	33,677		
" Feb. 1 to April 8.....	98,905		
 Total.....	 \$142,053		
Disbursements, January.....	\$36,053		
" Feb. 1 to April 8.....	70,009		
 Balance, April 8.....	 \$35,991		

The receipts exceed the disbursements by \$26,520. The report was referred to a master for audit.

Cincinnati, Hamilton & Dayton.—It is announced that the committee in charge of the pool lately formed in Cincinnati has agreed to sell the stock held in the pool to Mr. Hugh J. Jewett and associates, who are acting in the interest of the New York, Lake Erie & Western. There are about 20,000 shares in the pool, out of a total of 35,000, and it is understood that Mr. Jewett agrees to buy other stock that may come in up to a certain limit, said to be 23,000 shares. The price paid for the stock is par, apparently a very good bargain for the sellers. The purchase gives the Erie a controlling interest in the road, securing its entrance into Cincinnati and some other advantages.

Columbus & Cincinnati.—This company has filed articles of incorporation for a railroad from Columbus, O., southwest to the Marietta & Cincinnati road near Clinton Valley. The distance is about 68 miles, and the line, if built, would complete a new road from Cincinnati to Columbus 114 miles long, or seven miles less than the Little Miami. The incorporators are Daniel McLean, M. J. Williams, Milt Gardner, M. Pavey, J. D. Stuckey, C. A. Palmer, George Melvin, C. H. Brownell, Charles M. Stimson, James Pursell and M. Willard.

Coudersport & Port Allegheny.—This company has been organized to build a railroad from Port Allegheny, Pa., on the Buffalo, New York & Philadelphia road, east to Coudersport, in Potter County, a distance of 17 miles.

Florida & Northwestern.—A preliminary survey has been made for a new line from Jacksonville, Fla., to Tallahassee and thence to a connection with the Southwestern, of Georgia. The parties interested are said to be the syndicate owning the Disston grant about Lake Okeechobee.

Hartford & Connecticut Valley.—This company is making arrangements to run a daily line of steamboats between Saybrook, Conn., and New York, in connection with its railroad from Hartford to Saybrook.

Housatonic.—This company has under consideration the building of a branch from Lee, Mass., to the new Goss Quarry, a distance of about three miles. A preliminary survey of the branch has just been made.

Illinois Central.—This company's statement for March gives the traffic on its lines as follows:

	1882.	1881.	Increase. P. c.
In Illinois.....	\$537,338	\$449,963	\$87,375 10.4
In Iowa (leased lines).....	158,033	107,826	50,207 46.5
Total.....	\$695,371	\$557,789	\$137,582 25.7

During March, 1882, the land sales were 679.72 acres for \$3,676.60, and the cash collected on land contracts was \$5,843.32.

Work is soon to be begun on the branch from Park Side station to South Chicago. The right of way has been secured.

Illinois Midland.—The new Receiver has completed his arrangements, and train service has been resumed over the road after a suspension of over two weeks.

Kansas & Missouri.—This company has been organized to build a railroad from Arcadia, Kan., on the Ft. Scott, Southeastern & Memphis road to Cherokee, a distance of 67 miles. It is controlled by the Kansas City, Ft. Scott & Gulf Company.

Lehigh Valley.—This company is building a loop line from Pittston, Pa., to Wilkesbarre, along the line of the disused canal. It will have a double track and will be used by all the through trains when finished. Only local trains will be run into Pittston on the old track.

Louisville & Nashville.—The mortgage to secure the issue of \$10,000,000 trust bonds recently put on the market has been executed and put on record. The property pledged as securities consists of \$18,529,000 stocks and \$9,633,000 bonds of leased and controlled lines, and of leases, contracts, roads owned and other property, the total estimated value being \$30,681,000 in all.

Marietta & Cincinnati.—The time for the deposit of securities under the plan of reorganization expired April 15. It is stated that there have been deposited 96 per cent. of the bonds and over two-thirds of the stock. This makes the agreement binding according to its terms.

Mississippi, Albuquerque & Interoceanic.—This company has made application to Congress for permission to secure right of way through the Indian Territory from Ft. Smith westward. The proposed route is by the Cimarron and Canadian rivers, and is for a long distance parallel to the Atlantic & Pacific line.

Mississippi Valley.—This organization has bought the surveys, right of way, etc., which had been secured by the New Orleans, Red River & Texas Company for its proposed line from New Orleans to the mouth of Red River.

The projected line of the Mississippi Valley road is from New Orleans up the east side of the Mississippi to Natchez, Miss., and then on the west side to Bowie, Ark., where connection will be made with the Little Rock, Mississippi River & Texas road.

Missouri Pacific.—A dispatch from St. Louis, April 17, says: "Most of the ground upon which stands the Missouri Pacific Railroad depot, and which constitutes the freight yards, tracks, etc., west of Seventh street, this city, was sold at public auction by the Sheriff, this afternoon, to satisfy a judgment obtained some time ago for non-payment of rent of the Booneville Branch of the road. This is a part of the proceedings taken a few months ago by the same parties when they caused the sale of the Poplar street track of this road. Judge Portis, attorney of the Missouri Pacific Company, protested against the sale and warned the Sheriff that he proceeded in the sale at his peril, but the sale went on and the property was bid in at a nominal price by L. C. Nelson, one of a syndicate who are engineering the matter."

Mt. Vernon, Coshocton & Wheeling.—This company has filed articles of incorporation for a railroad from Marion, O., by Mt. Gilead, Mt. Vernon and Coshocton to a point on the Wheeling & Lake Erie, about 23 miles from Wheeling. The distance is about 110 miles. The new company has applied to the Board of Public Works for authority to use about 20 miles of the old Walthonding Canal as a part of its road-bed.

New Bonds.—New issues of bonds are offered on the market as follows:

The Buffalo, New York & Philadelphia.—Offers \$7,000,000 consolidated 6 per cent. bonds, having 40 years to run, at 105 and interest. The company, as recently consolidated, has 205 miles of road completed and 120 more in progress or projected; the mortgage also covers a controlling interest in 16,000 acres of coal land. The total issue of the bonds authorized is \$11,000,000, of which \$4,000,000 are reserved to pay off outstanding prior bonds. Subscriptions will be received from April 19 to April 24 by J. & W. Seligman & Co., New York; Seligman Brothers, London; Seligman & Stellheimer, Frankfurt; Alsborg, Goldberg & Co., Amsterdam; and the Banque de Bruxelles, Brussels.

New Haven & Northampton.—One of the most remarkable and bitterly contested railroad controversies on record appears likely to be reopened. The Plantsville case had been, it was supposed, finally settled, but the company is now trying to secure the passage of a law which will permit it to run certain express trains past the Plantsville station without stopping. The company claims that its intention is to run a fast express train in connection with the Hoosac Tunnel line, making no stops at way stations; but the Plantsville people, having won their case only after so hard a fight, are naturally suspicious, and oppose the present move as an entering wedge, insisting upon their rights.

New York & New England.—This company has recently contracted for 18 new locomotives and 1,100 freight cars.

The Railroad Committee of the Massachusetts Legislature has reported favorably the bill authorizing the sale of the stock in this company owned by the state. It provides that the stock may be sold to the company at not less than \$50 per share (par value \$100), and also authorizes the company to issue \$5,000,000 new bonds for the purpose of buying the stock, providing new equipment, etc. The state holds about \$3,450,000 out of the \$20,000,000 stock.

New York, Pennsylvania & Ohio.—The bridge over Brokensaw Creek near Corry, Pa., which was 185 ft. long and 30 ft. high, caught fire from locomotive sparks on the night of Friday, April 14, and was destroyed. Men and lumber arrived on the ground at 9 o'clock Saturday morning, and at 2 o'clock Sunday morning, in 17 hours, the temporary bridge was completed and trains crossed. While the bridge was going up trains were run around the gap by way of Irvineton and Falconer, using the Philadelphia & Erie and the Dunkirk, Allegheny Valley & Pittsburgh track.

New York Railroad Commission.—The New York Assembly has passed the bill providing for the establishment of a railroad commission in that state. As passed, it provides for a board of three commissioners, who are to be elected by the people.

Ohio Central.—It is reported that this company has made a pooling agreement with the Columbus, Hocking Valley & Toledo on traffic from points in the Hocking Valley coal region where the two roads compete.

Ohio & Mississippi.—Receiver Douglas reports to the Court for March as follows:

Cash balance, March 1.....	\$83,848.00
Receipts from all sources.....	458,525.50

Total..... \$542,376.68

Disbursements..... 352,058.38

Balance, April 1..... \$190,318.30

Of the disbursements only \$46,35 were on old accounts prior to the receivership, the balance being for current accounts and transactions of the Receiver.

Orange Ridge.—Grading has been begun on this road, which is to run from the South Florida road at Sanford, Fla., to Seminole Springs.

Pennsylvania.—It is said that the Sunbury, Hazleton & Wilkesbarre Branch is to be extended from Sunbury, Pa., up the west side of the Susquehanna to Milton, about 14 miles. This extension would be in effect a second track for the Philadelphia & Erie Division, which runs on the opposite side of the river, from Sunbury to Milton.

Trains have been put on between Philadelphia and Long Branch over the new route by way of Pemberton and the New Long Branch & Sea Shore road from Pemberton to

Sea Side Park, and thence along the shore to Bayhead, running from that place over the New York & Long Branch road. This is a more direct line than the old route by Monmouth Junction.

It is said that the company will run excursion trains from Baltimore to Cape May and Atlantic City, the route being by the Philadelphia, Wilmington & Baltimore to Delaware City, thence by steamboat to Salem, N. J., and thence over the West Jersey road.

Portage, Westbourne & Northwestern.—This road is now graded from Portage la Prairie, Manitoba, to Gladstone, 86 miles, and tracklaying is in progress. It is to run to the Peace River country.

Providence Terminal Improvements.—The commission appointed to consider the question has made a long report to the City Council of Providence, R. I., recommending that the bay known as the Cove in that city be filled in, and the land used as a site for a station or stations for all the railroads entering the city. The Commission claims that its plan will provide better accommodations for the railroads, and be very much more convenient for passengers; that it will do away with the tracks now laid in some of the busiest streets of the city, which are a cause of trouble and danger, and that it will dispense with several dangerous grade crossings. It is proposed that part of the cost be borne by the railroads and part by the city, the companies in return to convey to the city the lands occupied by their present stations.

Richmond & Danville.—The following statement is published for the six months of this company's fiscal year from Oct. 1 to March 31:

	1881-82.	1880-81.	Increase. P. c.
Gross earnings.....	\$2,023,277	\$1,811,355	\$212,022 11.7
Expenses.....	1,212,739	1,042,739	170,000 16.3

Net earnings..... \$810,638 \$768,616 \$42,022 5.5
Percent of expenses..... 59.9 57.6 2.3

The expenses for March are partly estimated. A circular from the company says:

"This result was attained notwithstanding the unusually short cotton and tobacco crops along the entire lines in the system, and in spite of insufficient equipment, due to the failure of contractors to furnish new rolling stock in time to provide for the largely increased business of the roads during the fall months. New equipment is now, however, arriving freely, the company having added to its equipment (nearly all received since Dec. 1) as follows: Say 658 freight cars and 27 locomotives. The effect was at once shown in increased earnings.

"In addition to the surplus from the earnings of the company's roads, large profit has been derived from the sale of its Virginia Midland rights, amounting to over \$285,000, equivalent to 7 per cent. on the capital stock, out of which was added to the usual quarterly dividend of 2 per cent., paid Feb. 15, an extra cash dividend for 0 1/4 per cent. In addition to the cash dividends, there has been issued to stockholders the right to subscribe for 8 per cent. debenture bonds of the Richmond & Danville Company in the same amount as the amount of the capital stock held by each stockholder at the price of 45 cents on the dollar. The full subscription has been taken and 10 per cent. already paid. The first semi-annual interest payment of 3 per cent., say \$120,000, being payable Oct. 1 next. The present surplus earnings would warrant a larger annual dividend than 8 per cent., but the policy of the company has been to expend a large portion of the surplus earnings in acquiring additional equipment and improving the properties, as well as strengthening the sinking fund of the company.

"The control by this company of roads aggregating over 2,050 miles is represented by a stock capital of but \$4,000,000. A trust fund of shares, aggregating over 51 per cent. of the capital, has been placed with the Central Trust Company to insure control under the present management for a term of years. The stock so deposited with the Central Trust Company is subject only to an agreement touching voting power, and is liable to no claim or lien whatever, nor has the said Trust Company loaned any money or credit on account of this agreement or trust. The number of shares of the stock thus as above left in the hands of the public for purchases and sales in the market is less than 20,000, that is, less than \$2,000,000. A statement of assets and liabilities shows total assets (as of Sept. 30, 1881) over all liabilities of \$3,351,440."

Richmond & Petersburg.—Work is progressing actively on the temporary bridge over the James River at Richmond, to replace the one lately burned. Two spans have been already raised, one at each end. The temporary bridge will be replaced by a substantial iron structure as soon as possible.

Rochester & Pittsburgh.—The Rochester (N. Y.) *Democrat and Chronicle* of April 13 says: "On Friday last the long contest between the Erie Railway Company and the Rochester & Pittsburgh Company for the possession of the valuable rights of way at Ridgeway, Pa., was virtually ended in favor of the company last named at 12 o'clock that night. The company placed a force of over 600 men at work, and by 10 o'clock the following morning 1,500 ft. of track had been laid around Willard's Point, thus rendering the proposed Erie route inaccessible. The fight for this important point has been going on for eight months, and has delayed for that time the completion of the Rochester & Pittsburgh Railroad to its coal mines in Jefferson County, Pa. Tracklaying on the remaining part of the track is now being rapidly pushed forward, and direct connection will soon be made with the coal mines owned by the Rochester Railroad."

St. Louis, Alton & Terre Haute.—In the United States Circuit Court at Chicago, April 19, application was made for the appointment of a receiver for this road, on the ground that interest on some of the bonds has been passed and a large floating debt accumulated. The Court heard arguments and reserved its decision, intimating, however, that it was hardly likely that a receiver would be appointed, as it had not been shown that the property was being squandered or the creditors in danger of losing their claims through fraud or mismanagement.

Seattle, Puget Sound & Gray's Harbor.—This company has had a survey made of its proposed line, which is to extend from Seattle, Wash. Ter., through the Chehalis Valley to a point on Puget Sound, probably Olympia or Shelacoom. The road will be about 50 miles long.

Seattle, Walla Walla & Baker City.—This company has been organized to build a railroad from Seattle, Wash. Ter., over the Cascade Mountains to Walla Walla, and thence to Baker City or some other available point on the Union Pacific's Oregon Short Line. The line proposed is by the Snoqualmie Pass and the Yakima Valley.

Shenandoah Valley.—This company has closed a contract with E. E. Denniston, of Philadelphia, to lease under a car-trust arrangement seven locomotives, 130 freight cars and three tool cars, to be paid for in installments extending over seven years.

Work on the extension from Waynesboro, Va., to the Norfolk & Western road is progressing steadily.

Syracuse, Chenango & New York.—The election for new directors, ordered by the Court for April 17, has been postponed to April 29 by a special order, pending a decision from the Court of Appeals in the complicated litigation over the ownership of the road.

Terre Haute & Indianapolis.—Reports come from St. Louis that this company is desirous of terminating its present intimate relations with the Pennsylvania Company, believing that the road can do better when operated as an entirely independent line, free from all close alliances with other companies. The reports are somewhat indefinite in their nature.

Texas & Pacific.—A dispatch from New Orleans, April 18, says: "In the case of Pullman's Palace Car Company against the Texas & Pacific Railway Company, lately argued before Judge Pardue in the United States Circuit Court, his decision, just filed, establishes the disputed contract of the Pullman Company with the railway company as a valid and binding contract upon the railway company for its unexpired term of nine years. It holds that the said contract is not obnoxious to the charter of the railway company, or to the laws of Texas, or to public policy, or to any other of the objections raised against it. It further holds that the remedy for violation of contract should be by an action at law for damages, and that the inconvenience involved makes its enforcement by injunction impracticable."

Texas & St. Louis.—Work on this company's line across Arkansas has been making very rapid progress of late. On the 20 miles from Bird's Point, Mo., opposite Cairo, south to the junction with the Little River Valley & Arkansas road (which this company bought some time ago), the grading is all done and tracklaying has been begun. From Malden, Mo., the end of the purchased road, tracklaying has been in progress some time, and the rails are now down to Jonesboro, Ark., 75 miles southwest of Malden. From Clarendon, the White River crossing, grading is done for 50 miles north by east and track laid 18 miles. From Pine Bluff west by south iron is down for 20 miles, the grading done much further; at Pine Bluff preparations are being made to build the bridge over the Arkansas River. From Texarkana the track is laid east to the Red River, 20 miles, and much of the grading is done between the Red River and Camden.

Toledo, Cincinnati & St. Louis.—Track on the St. Louis line of this road is now down for 60 miles southwest from the late terminus at Ridge Farm, Ill., and 130 miles from the starting point at Frankfort, Ind., leaving about 120 miles to reach East St. Louis, on which about half the grading is done. Contracts were to be let this week for the remaining 60 miles of grading, and also for tracklaying on 80 miles. The work is in progress, and the company expects to have the track laid 170 miles from Frankfort by June.

Tonawanda, Genesee Valley & Pine Creek.—Nearly all the stock of this company has been subscribed, and most of the right of way has been secured. It is one of the new narrow-gauge lines proposed in the oil region of Southwestern New York.

Union Pacific.—The Kansas Central Division is now completed to Mideopolis, Kan., 21 miles west of the late terminus at Clay Centre, and 171 miles from Leavenworth.

Wabash & Logansport.—It is proposed to build a railroad along the line of the Wabash & Erie Canal from Wabash, Ind., to Logansport, a distance of 31 miles.

Waukegan & Warrenton.—This company has been incorporated to build a railroad from Waukegan, Ill., west by south to Warrenton station, on the Chicago, Milwaukee & St. Paul road, about five miles.

Wellsville, Honeoye & Ceres.—This company has been organized to build a railroad from Wellsville, N. Y., through Allegany County, and into Potter County, Pa., to reach the new oil fields there.

Wisconsin Central.—Work is soon to be begun on the new line from Neenah, Wis., to Milwaukee. It is stated that arrangements have been completed to use the Chicago, Milwaukee & St. Paul track from Schleisingerville to Milwaukee, 33 miles. The company has asked the city of Oshkosh to subscribe \$75,000, and expects to secure other local aid.

ANNUAL REPORTS.

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Cleveland, Columbus, Cincinnati & Indianapolis.

This company owns lines from Cleveland, O., to Columbus, 138 miles; Galion, O., to Indianapolis, 203 miles, and Delaware, O., to Springfield, 50 miles, being 391 miles owned. It leases the Mt. Gilead Short Line, a spur 2 miles long, to Mt. Gilead; it also leases the Cincinnati & Springfield road, from Springfield to Cincinnati, 80.5 miles,

making 473.5 miles worked. The earnings given in the report are for 391 miles, the net profit or loss from the leased lines only being given. The report is for the year 1881.

The equipment consists of 150 engines; 59 passenger, 6 sleeping, 2 parlor, 17 baggage and express and 7 mail cars; 2,743 box, 625 stock, 664 flat, 1,206 coal and 69 caboose cars; 1 directors', 1 pay and 12 service cars.

The equipment of the Cincinnati & Springfield road is 16 engines; 15 passenger, 6 baggage and 2 postal cars; 99 box, 94 stock, 79 coal and 11 caboose cars.

During the year the equipment was increased by 1 passenger, 1 postal and 952 freight cars; there are 1,000 freight cars on the road under a car-trust agreement.

The general account is as follows:

Stock.....	\$15,000,000.00
Less owned by company.....	8,300.00
Stock outstanding.....	\$14,991,700.00
Bonds.....	6,408,000.00
Bills, accounts and balances payable.....	880,123.31
Balance to credit of income.....	1,912,062.26
Total.....	\$24,191,885.57
Road and equipment.....	\$18,493,091.65
Stocks, bonds, etc.	2,375,218.89
Cin. & Springfield advances.....	1,721,702.31
Materials on hand.....	190,522.36
Bills, accounts and balances.....	1,221,966.20
Cash.....	189,384.16
	24,191,885.57

The bonded debt consists of \$75,000 old Cleveland, Columbus & Cincinnati bonds; \$380,000 Bellefontaine & Indiana bonds; \$3,000,000 sinking fund bonds and \$2,953,000 consolidated bonds. During the year \$41,000 prior lien bonds were retired and \$179,000 consolidated bonds issued, making a net increase of \$138,000 in bonded debt.

The stocks and bonds owned include \$300,000 stock and \$676,750 bonds of the Indianapolis & St. Louis Company (whose road is worked in connection with this road); \$526,000 Cincinnati & Springfield second-mortgage bonds; \$105,772.50 Dayton & Union stock and bonds, and \$671,186.09 Cincinnati, Hamilton & Dayton stock.

The traffic for the year was as follows:

Train miles: 1881.	1880.	Inc. or Dec.	P. c.
Passenger..... 1,069,936	.....	.....	.....
Freight..... 2,512,385	.....	.....	.....
Service and switching..... 1,170,976	.....	.....	.....
Total..... 4,684,297	4,559,020	I.	125,277 2.8
Pass. carried..... 899,330	858,791	I.	40,539 4.7
Passenger miles..... 41,689,179	40,303,416	I.	1,325,703 3.2
Tons Freight carried..... 2,880,923	2,441,643	I.	439,280 18.0
Ton miles..... 480,723,710	420,482,919	I.	60,240,791 14.3
Av. train load: Passengers, No. 41.65	.....	.....	.....
Freight, tons..... 191.35	.....	.....	.....
Av. receipt: Per pass. mile. 2,150 cts.	2,139 cts.	I.	0.020 ct. 0.0
" " net. 0.937 "	0.915 "	I.	0.022 " 2.4
Per ton mile. 0.671 "	0.792 "	D.	0.121 " 15.3
" " net. 0.160 "	0.202 "	D.	0.042 " 20.8

The increase in freight was greater in local than in through business. In passenger traffic there was only a small increase in local business, but a considerable gain in through travel.

The division of traffic and the rates thereon, in cents, were as follows:

Through.		Local.	
Miles.	Rate.	Miles.	Rate.
Passengers..... 19,886,287	1.760	21,502,892	2.514
Freight, east-bound. 248,278,916	0.499	60,803,513	1.104
" west-bound. 123,584,514	0.599	48,056,767	1.198
Total freight..... 371,863,430	0.532	108,860,280	1.146

Of the total freight traffic 64.3 per cent. was east-bound and 35.7 per cent. west-bound, the average rate on all east-bound freight being 0.617 cent, and on all west-bound, 0.767 cent per ton per mile.

The average receipt per ton-mile for 10 years past has been as follows, in cents:

1881.	1880.	Inc. or Dec.	P. c.
Freight..... \$3,225,356.15	\$3,328,208.09	D.	\$63,892.37 1.4
Expenses.... 2,967,169.64	2,976,625.76	D.	9,436.12 3.0
Taxes..... 112,688.54	118,187.74	D.	5,490.20 49.6
Total..... \$3,079,858.18	\$3,094,813.50	D.	\$14,955.32 0.4
Net earn. \$1,296,763.93	\$1,345,700.58	D.	\$48,937.05 3.5
Gross earn. per mile. 11,198.52	11,356.81	D.	158.20 1.4
Net earnings per mile. 3,316.53	3,441.69	D.	125.16 3.5
Per cent. of expenses. 70.37	69.70	I.	0.67
Excluding taxes, the working expenses were 67.80 per cent. of gross earnings in 1881, against 67.03 per cent. in 1880.			
The Mt. Gilead Short Line earned \$4,940.14 gross and \$157.40 net, doing quite as well as was expected.			
The usual renewals and improvements were made. Several bridges were built and new stations erected. There were used in renewals 2,143 tons steel rails and 221,202 new ties. There were 6.88 miles of new sidings built, making 20.08 miles of second track and 126.57 miles of sidings now in use.			
Expenditures for additions to property were \$318,656.35, new equipment taking \$291,567.13 of that amount.			
The income account was as follows:			
Net earnings as above.....	.....	\$1,296,763.93	
Premium on bonds sold, etc. ....	.....	32,240.92	
Total.....	.....	\$475,218.40	
Interest on bonds.....	.....	\$1,329,004.85	
Scrip redeemed.....	.....	268.00	
		475,486.40	
Balance for the year.....	.....	\$853,518.45	
Balance from 1880.....	.....	1,058,543.81	
Balance to 1882.....	.....	1,912,062.26	

President Devereux says:

"The year 1881 is notably one in which, from the disagree-

ments and unreasonable competition between the various railroad lines, all transportation rates were brought to the lowest point ever known. During the last half of the year the through freight rates were, to say the least, unremunerative, and the great increase shown in freight movement resulted in no gain of net revenue. The tonnage of the railway is largely competitive, and its rates are in the main controlled and influenced by the policy and action of rival and connecting roads.

"The cause of such disturbance and depression in rates, largely due to unlicensed competition, would not seem to be beyond correction and assured regulation. It is to be believed the rail traffic will not continue to be moved at further reduced rates, and that the railroad transportation tariffs of the West will in some reasonable and permanent form be established and maintained.

"It is apparent from the results that for the future, although if only an average tonnage is transported, if carried on a basis of tariff rates that may be low, but reasonable and uniform, the prosperity of the company is assured.

"The contribution of the different freight line organizations to the gross revenue of the past year is shown as follows:

Received Eastbound.	Received Westbound.</
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